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ABSTRACT

The third volume of the working paper series produced in association with the Regional Colloquium for Technology Studies offers a range of insights into modern technology and some of the thinkers who have philosophized about its nature and societal impact. The essays are critical appraisals of the ideas of philosophers of twentieth-century technology and technology's relationship to society. They are: (1) "Lewis Mumford, Master of Many Arts: The Forming Years" by Donald Miller; (2) "Technology and Traditional Culture Institutions" by Paul Durbin; (3) "Langdon Winner on Jacques Ellul: An Introduction to Alternative Political Critiques of Technology" by Carl Mitcham; (4) "An Exchange of Letters - From Langdon Winner and Carl Mitcham"; and (5) "Contemporary Critiques of Technology: Response and Comments" by Steven Goldman. (ML)

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Working Papers
Technology Studies Resource Center
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CONTEMPORARY CRITIQUES OF TECHNOLOGY

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TECHNOLOGY STUDIES RESOURCE CENTER

WORKING PAPERS SERIES

Stephen H. Cutcliffe, Editor

VOLUME 3, JUNE 1985

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COVER DESIGN

The cover was designed by Alan Cutcliffe to represent the broad spectrum of topics in both the humanities and technologies covered in this working papers series. The central symbol of daVinci's universal man is juxtaposed with a multiplicity of images associated with the humanities and technology, all echoing the circular shape, hence the globe, gear, computer disk, grindstone, flower, atom, satellite dish, wheel, and sun. The choice of images also juxtaposes the modern with the historical, the philosophical with the practical, an intentionally thought-provoking contrast of scale and topic, corresponding with the intent of the series itself.

Copies of the TSRC Working Papers are available prepaid at $6.00 each (checks payable to Lehigh University) through the Office of the Bursar, Alumni Memorial Building #27, Lehigh University, Bethlehem, PA 18015.

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PREFACE

"Contemporary Critiques of Technology" is the third in an ongoing series of working papers being published by Lehigh University's Technology Studies Resource Center. The publication of this working papers series, in association with the Regional Colloquium for Technology Studies which serves as the major source for volumes in the series, is designed to help foster a regional research community in this field. It is our hope that the publication and distribution of papers from each colloquium in a working papers format will stimulate new research, facilitate wider dissemination of research and ideas, encourage peer response and adoption of ancillary texts for appropriate courses, and increase opportunities for these papers to be selected for subsequent publication in formal journals and anthologies after appropriate revision.

The Regional Colloquium for Technology Studies and the associated working papers series are activities of Lehigh University's Technology Studies Resource Center. The TSRC is engaged in the creation and dissemination of materials and programming that will lead to a greater understanding of technology on the part of a wide range of audiences, especially their understanding of the mutual interaction of technology and social institutions and values. Among other functions, the Center serves as a focus for academics from all disciplines to collaborate in pursuing research and educational opportunities in technology studies, both with academic colleagues and in conjunction with non-academic sponsors. The Regional Colloquium

and working papers series are just two vehicles within the Center's many activities that are intended as means for expanding our understanding of the social context of technology in today's world.

The Colloquium from which the essays in this volume are drawn was organized primarily with a view to taking a critical look at a number of important thinkers and philosophers of twentieth-century technology and of course its relationship to society. In the first paper Donald Miller presents an insightful overview of Lewis Mumford's little known formative years. This is to be the first part of an extended intellectual biography of one of the leading American philosophers of technology in this century. Paul Durbin takes a somewhat different tack by arguing for public interest activism as a means of controlling technology in contemporary society. In doing so, he draws on the work of a number of critics of technology including among them Daniel Bell, John Kenneth Galbraith, and Edward Walter. Carl Mitcham focuses his attention primarily on the work of political philosopher Langdon Winner by contrasting him briefly with Jacques Ellul. This is the first part of a projected longer comparison of these two thinkers. Steven L. Goldman rounds out the volume with his response to the three papers, using Giambattista Vico's notion of the intelligible universal, a mode of understanding or approaching the world in which technology has gotten out of touch with the culture's central communal symbolic structures, as a model for correlating contemporary criticisms of technology. The volume is further supplemented by a brief rejoinder by Durbin to some of the comments of Goldman and Mitcham made originally at

the Colloquium and by an exchange of letters between Mitcham and Langdon Winner. Here it is particularly revealing to have the direct response of Winner to Mitcham's analysis.

These four essays, five in many ways since Goldman's commentary is as much an essay in its own right as it is a formal response to the other three, offer a range of insights into modern technology and some of the thinkers who have philosophized about its nature and societal context. Hopefully they will provide the reader with some useful entry points into the field of technology studies.

Comments or queries on the Working Papers Series, the Colloquium for Technology Studies, or the Technology Studies Resource Center are welcome and may be forwarded directly to me.

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LEWIS MUMFORD, MASTER OF MANY ARTS:

THE FORMING YEARS

Donald L. Miller

"A man arrives, revolution follows."

Ralph Waldo Emerson

Lewis Mumford--master of many arts--is one of the formidable minds of this century. A writer of remarkable reach and versatility, his contributions to philosophy, literary studies, biography, art and architecture criticism, town planning and the history of cities and technology have re-opened for fresh consideration huge areas of the human heritage, broadening our definition of what it means to be human. One of America's leading men of letters, he may be our most challenging social philosopher as well.

Though a pioneer in several fields, Mumford is by design a generalist, a fully rounded thinker who has taken Life itself as his supreme concern. Born in New York City in October, 1895, his works and days have spanned the century, from the opening decades of social hope, to our own age of diminished expectations. The work of his lifetime--over 28 books alone--is an interconnected effort to explain how the world of his youth became the world of today. Whatever his other claims, Mumford is pre-eminently the interpreter of the century of science, war and the machine.

A thoroughly modern man, Mumford is also something of an old-fashioned moralist. With the aroused indignation of an Old Testament prophet, he has assailed the deteriorating quality of life in the twentieth century. The crux of the modern problem, in his view, is our life-denying commitment to unlimited power and economic growth--to "the goods life," as he puts it, rather than the good life. No other writer of our time has recorded with greater erudition and masterly sweep the rise and triumph of machine civilization in the West and its debasing impact on

imagination, free choice and creative living.

Mumford's great aim, however, has been to change history, not simply to record it. The renewal of life--the creation of a new community and a new personality--is the challenge he has set for our age. But the very possibilities of renewal, he cautions, hinge on an informed understanding of the sources of the contemporary predicament. So our future is ineradicably bound up with our past--and it is to a deeper understanding of the human heritage that Mumford has turned his entire life and career. He re-wrote the story of mankind to signal the possibilities of a vastly richer future.

Mumford made his most original assessments of our technological society in four decades of sustained work between 1930, when he began Technics and Civilization, his first sweeping survey of the impact of the machine on modern culture, and 1970, the year he completed The Pentagon of Power, the fourth in a series of works dealing with technology "as an integral part of man's higher culture."[1] Every one of these books, however, emerged from a view of man and the machine he formed in his earliest writings, from the end of World War I, when he entered the New York publishing world as a self-trained writer without a university degree or any literary connections, and the onset of the Great Depression, a clear dividing point in his personal and intellectual life. This--the decade of the 1920s--was Mumford's formative period, when his cast of mind and matured moral outlook were forged, and when he developed the approach to history and social change that would distinguish all of his later work. This

essay considers his life and his ideas in these forming years, and seeks to locate some of the principal social and personal factors that coalesced to shape his formal thought and activist commitment. Part of a biography-in-the-making of Lewis Mumford, it is a very personal story of a young writer who struggled to change the world as it changed him, and in the process made himself into an independent thinker of undisputed importance.

A born and bred New Yorker, the city was the decisive shaping influence of Mumford's early life and thought. The New York of his youth was the vigorous center and symbol of the age of industry and reform, a city that exemplified the outsized confidence of those years. Like the patron saints of his youth—George Bernard Shaw and H. G. Wells--Mumford expected much of the new century. Science and democracy seemed about to usher in a permanent age of peace and universal prosperity; and technology, in all its wondrous applications, from the airplane to the automobile, seemed to have given man a new freedom and mastery. For the first twenty years of his life, Mumford shared the innocent hopes of his generation and "rallied to the movements and projects that promoted them."[2]

The New York Mumford knew best as a child was a small corner of the city, the predominantly German-Irish district of the upper West Side that stretched in monotonous brownstone corridors up the cross streets from Riverside Drive to Central Park West. The illegitimate son of Elvina Baron Mumford, a native New Yorker of German-Protestant ancestry who ran a series of boarding houses to support herself and her only child, Lewis Mumford never met his

father. Not until he was forty-seven years old did his mother disclose her "secret" to him--that he was the son of a prosperous Jewish businessman she had had a brief affair with while she was a housekeeper in the home of his uncle, the man she really loved, and who Lewis, as a child, secretly suspected was his biological father.[3]

Raised by his mother and a protective Irish nurse, Nellie Ahearn, Mumford was a withdrawn, bookish boy, slight of build and never robustly healthy. As a grammer school student he experimented with wireless radio sets and dreamed of becoming an electrical engineer. This drew him to New York's Stuyvesant High School, which had a reputation for preparing students for careers in the sciences. At Stuyvesant he published his first professional articles in electrical magazines; and there he first became interested in machine technology, receiving training in smithing, wood and metal turning, casting, cabinet making and foundry work.

But for young Mumford, Stuyvesant was more than an absorbing technical education. It opened to him the infinitely varied world of the twentieth-century metropolis.

Stuyvesant was located in the Lower East Side, in the heart of the city's immigrant quarter, the home of Tammany Hall, Tom Starkey's saloon, the Jewish Daily Forward and the painted whores of Forsythe Street and Third Avenue. Here, away from his largely second-generation American neighborhood, where "except for an occasional twist of Irish, everyone spoke plain Manhattanese," Mumford found himself surrounded by the brash sons of Jewish

greenhorns, hard, street-wise kids whose aggressive vitality made him feel, he recalled, "like a sick goldfinch among a flock of greedy sparrows."[4]

This was his first confrontation with real poverty--and with radicalism. Mumford's political views at the time were smugly conservative. Now he encountered teachers and classmates who proclaimed themselves socialists. For a time, Mumford caught their fever, stamping envelopes in the Second Avenue headquarters of the Industrial Workers of the World with his friend Irwin Granich, a tough Christie Street Marxist, who later changed his name to Michael Gold and went on to become an important communist writer.

Everything at Stuyvesant seemed to impinge on his settled view of things. The young instructors brought in the new ideas of Cornell, Chicago and Wisconsin. And one of them, a young English teacher, introduced Mumford to George Bernard Shaw, who became the inspiration of his adolescence. After reading almost all of Shaw, and writing and acting in the school's dramatic society, Mumford abandoned plans to enter engineering school and set out to become a newspaperman, as the first step, he hoped, toward a career as a novelist or a playwright.

Following graduation, he went to work as a copy boy on James Gordon Bennett's Evening Telegram. All the while he took courses at the Evening Division of City College. At the Telegram, Mumford was assigned an early morning shift, rising at 3:00 a.m. to take the 6th Avenue "el" to Herald Square, arriving at the office just before dawn to sweep the floor and set out the flimsey in the

city room. Unable to get a quick promotion to cub reporter, he soon tired of toting beer and sandwiches for the re-write men, and left the Telegram in disgust, never again to seek "life" in a newspaper office.[5]

The evening school at City College was an altogether different kind of experience; and it changed his life profoundly. The students were mostly mature men, aggressively interested in life and learning; and with only 500 students enrolled, the school had the intimacy and intellectual esprit of an exceptional small college. "There was something amoeboid about the ordinary undergraduate," Mumford would write years later of his education in the evening division of CCNY, "but we night students had a shape and a backbone and a definite point of view. Our discussions were battles . . . Our professors . . . men of character."[6]

It was at City College, in his biology class, that Mumford encountered the writing of Patrick Geddes, the Scotish botanist, sociologist and town planner, the man he would soon call his Master. Though they did not meet until 1923, from this point on Geddes was the single most important influence on Mumford's development, "a Jovian father," as Mumford once described him, "stern and practically omniscient."[7]

Geddes began his professional career as a biologist, a student of Thomas Huxley, Darwin's "Bulldog," but his broad-ranging interests carried him into the fields of art, religion, census analysis, anthropology, economics, paleontology and Eastern culture. A veritable twentieth-century Leonardo, he "took

all knowledge as his provence and all life as his field of action."

Geddes was primarily an oral teacher, an incessant talker, barely audible sometimes, his rapid-fire soliloquies muffled by his thick beard and moustache. And he was hopelessly disorganized, leaving behind hundreds of unfinished projects and tasks. He would never tie himself down to write the opus that would bring together his life's work and ideas. But many of those he reached judged him one of the outstanding minds of his age.[8]

A pioneer of environmental studies, of town and regional planning, and, above all, of ecological thinking, Geddes was the first English-speaking sociologist to draw attention to the formative role of the city in the process of social evolution. His books on urban development fired Mumford's interest in the historic city and taught him to look at the contemporary city in a wholly new way.[9]

Geddes' sociology was based on close, first-hand observation of the city and its surrounding region. He never began a planning project without first spending at least a week wandering on foot through a city, letting it "speak" to him, absorbing as much as he could of its history and habits from its buildings, its terrain, and its people. He was also sensitive to the interconnection between city and country, insisting that the far-reaching problems of the modern city could be mastered only on a regional basis. From his Outlook Tower Observatory, atop Edinburgh's Castle Hill, with an incomparable view of the old city and the grey Lothian hills that blended into the horizon, Geddes

undertook a systematic survey of the entire Edinburgh region, examining its environmental characteristics as well as the genesis of its social heritage--its people, its languages, its literature. To Geddes, the survey method--detailed first-hand diagnosis of the region's natural and human resources--was the starting point and foundation for all regional and civic planning efforts.

Geddes' work shaped the cast and character of Mumford's urban thought, teaching him how to interpret cities and their place in civilization. But at first encounter it was Geddes the biologist, the exponent of a life of organic unity and personal engagement that made the strongest immediate impact upon him. The benchmark of Geddes' personal philosophy was the Athenian ideal of balance--instinct, emotion, reason, imagination should all be fully developed, with thought and action interlinked. Vivendo discimus--We learn by living--was his guiding motto. Education, real education, was not something one acquired in a book or in a lecture hall. Rather, it was life itself, an on-going process of growth comprising all of man's activities. "It is," as Mumford remarked at the time, thoroughly under the spell of Geddes, "man singing, painting, wondering, feeling, dreaming, walking, loving."[10]

Mumford could not have found Geddes at a more propitious moment in his emotional development. An erratic heart and what his doctors diagnosed as the first stages of tuberculosis had forced him, in 1916, to suspend his education at City College. This temporary release from formal education, along with the

influence of Geddes, led him to re-examine his entire intellectual and psychological development.

A one-act autobiographical play he wrote at the time, The Invalids, captures perfectly his gathering dissatisfaction with what he now saw as a cramped, sheltered, excessively bookish existence. Regius Storm, the play's central character, is a thin, stooped-shouldered youth of nineteen or twenty, "a product of his mother's tender care, . . . his nurse's solicitude, his teacher's coddling," protected, as Mumford describes him, from any "vital contact with the world." But in the play Mumford sees Regius's problem, and hence his own, as more than a narrowly constricted upbringing. Regius, Mumford explains, is so emotionally backward because since he first learned "his ABC's" he has received a "barrenly intellectualized training" which has "engrained in him a habit of living at second hand; with the result that though he has . . . a vast knowledge about art, industry, science, love, friendship . . . he has never had the least direct acquaintance with any of these. He is emotionally starved . . . while intellectually he is prodigious."[11]

Here is the real importance of Geddes's influence; Geddes provided exactly what was lacking in Mumford's educational routine, urging an education in touch with everyday life. In his capacious curiosity about the whole process of living, in his many projects and interests, Geddes conveyed to Mumford a sense "of what it was to be fully alive, alive in every pore, at every moment, in every dimension. . . . The impact of [Geddes's] person," Mumford wrote years later, "shook my life to the

core."[12]

Almost from the moment he gathered the import of Geddes's example, Mumford began to actively use the city itself as his university. At age 19 he set out alone on foot every afternoon, notebook and sketch pad in hand, to explore its streets and neighborhoods, stopping here and there to do a pencil sketch of a tenement or a water tower or one of New York's spindly bridges, or to take down a note on Manhattan's geology or on one of its bustling street scenes. As he walked about his city he proudly saw himself, on his own, acquiring the kind of "vivid, open air education that the youngster who grew up in Fifth Century Athens had every day of his life." He eventually developed such a practiced eye for urban observation that he could tell the approximate date a tenement had been built from a glance at a cornice or a fire escape. All of his later architectural and urban writing is grounded in these early first-hand surveys of his native city and region. The city, he would write years later, "is the point of maximum concentration for the power and culture of a community . . . Here is where the issues of civilization are focused." Here is where this wide-eyed "son of Manahatta" went for his first real education.[13]

While Mumford was actively surveying New York, he continued to take courses at City College, Columbia, and the New School for Social Research, where he studied with Thorstein Veblen. He eventually collected enough credits to graduate, but never applied for a college degree. He saw no need for it. He wanted to be a writer, not a professor; and he worked at his craft with

unwavering dedication in the face of a four-year failure to publish any of his offerings--his plays, his poetry, his fiction, or his urban reportage.

In 1920, after serving briefly in the navy in World War I, and, later, as an associate editor at the Dial, a journal of cultural radicalism, Mumford was invited by Victor Branford, Geddes's closest associate, to come to London as acting editor of the newly founded Sociological Review. At LePlay House, the Pimlico center of Geddes' Sociological Society, Mumford immersed himself in the master's sociology, returning to the United States less than six months later with a program of ideas he hoped would inspire a new kind of American revolutionary movement.

It was Geddes's bio-sociology, a sociology informed by his understanding of the life process, that most attracted Mumford, still an uncertain rebel without a clear philosophy. While some 19th-century biologists described life almost solely in terms of the environment's impact upon the organism, Geddes stressed the organism's capacity to strike back at the environment in an effort to overcome the forces threatening it. This quality of "insurgence," which reached its apex in man, was our most magnificent endowment. Geddes, however, insisted that our very capacity for cultural transcendence made us forever dependent on our past; for only those fully conscious of how they have been shaped by their history could creatively refashion that social heritage into purposeful plans for change.[14]

Geddes saw the city as the leading repository of the social heritage; and this, as much as anything else, explains his

passion for urban restoration. An early preservationist, he cautioned against wholesale demolition of the existing built environment. In his planning and civic reform work, in Edinburgh and some fifty world cities, he pioneered the doctrine of "conservative surgery"--preserving what was valuable in the existing physical and human setting, while boldly introducing desirable innovations. An advocate of direct action, and a follower of the anarchist Peter Kropotkin, Geddes distrusted the intervention of government authorities, preferring to leave the essential part of the re-development process to the neighborhoods involved. "Time, patience, loving care of detail, . . . and insistence upon human scale and human purpose," these were the characteristics of Geddes' civic work that Mumford carried over into his own work.[15]

Geddes was well into his sixties when he first corresponded with Mumford. In this intense disciple, forty years his junior, he thought he had found his Boswell. Mumford could help him to write the sociological synthesis he had never disciplined himself to undertake. For a time, while studying at LePlay House, Mumford considered giving himself to this effort. "To be a spoke in . . . [Geddes's] wheel would be a short way of traveling far." But soon it became apparent that what Geddes wanted was a "secretary," not a "collaborator." Determined to mark out an independent career for himself, Mumford resisted Geddes's repeated offers of collaboration. Their first face-to-face meeting in New York three years later killed once and for all any lingering possibilities of joint authorship; for no matter how close the intellectual

bond, the two were simply unable to develop a genuine relationship.[16]

In the presence of this imperious, incessantly demanding "Bull of the Herd," the reserved, well-mannered disciple never had a chance. The very day after his arrival in New York to lecture at the New School, Geddes exposed his real intention for coming to America. Seizing Mumford by the shoulders, and staring intently at him, "with tears welling in his eyes," the old man declared that he was the image of his dead son Alasdair, who had been killed in France in the war. "You will be another son to me," he told an incredulous Mumford, who knew he looked nothing like Alasdair, "and we will get on with our work together." But in the following weeks Geddes treated Mumford more like an acolyte than an associate, ordering him around like a grammar school pupil and even subjecting him to a blackboard grilling in the elements of his sociological method. The capping insult came on the final evening of Geddes's stay, when he left Mumford at the New School to pack his disheveled heap of clothing, notes, diagrams, and charts while he rushed off to dine with Lillian Wald. This was a job Mumford likened to "putting the contents of Vesuvius back into the crater after an eruption."

So, as the two exhausted men hastily shook hands that evening, Mumford somehow sensed that their "parting was really a final one." They would see each other one last time in Edinburgh, and they continued to correspond until Geddes's death in 1932; but though Mumford would continue to draw on Geddes's ideas and example, it was always on his own terms and for his own purposes.[17]

Mumford had had a fulfilling half year at LePlay House; but his heart and his head were urging him back to America. Before leaving for London he had fallen in love with Sophia Wittenberg, a beautiful, dark-haired secretary at the Dial. She resisted his earliest advances, but now he was determined to marry her. And then, he had work to do in America, his own country. Declining Geddes's invitation to join him on a city planning expedition in India--"Old stocks may rove," he told him, "we pioneers must settle down"--Mumford sailed for New York in late 1920.[18]

Shortly after returning from London, Mumford began a book on the history of utopian thought, a subject that had long interested him. Only cursorily treated by most Mumford critics, The Story of Utopias is perhaps the most important book for understanding his intellectual career and achievement. "Lewis was one of the few men," his friend Van Wyck Brooks remarked, "who have not ideas but an idea, and he was to spend his life working this out."[19] In The Story of Utopias, Mumford first addressed that dominating idea and theme--the rise of the machine and the mechanistic outlook in the West. Here also he introduced an approach to social change he would spend a lifetime refining.

Although Mumford did not see combat action in World War I, serving for a brief time on the home front, the war had a powerful impact on his thinking. When he was discharged from the navy he remembers facing "the cold, bright world of February 1919 with accumulated reserves of energy, and no sense whatever that my whole generation was already painfully skidding downhill. The armistice had been signed, and it was still possible to think, at

least hope, that the world had been 'saved for democracy.'"

Then, all of a sudden, the world as he had known it went to pieces. The Palmer raids, the Treaty of Versailles, the Allied invasion of Russia, the collapse of the American socialist movement, and the election of Warren G. Harding--all this dampened the younger generation's hopes for social change. It was no wonder that the young prefer "to live for the moment," concerned primarily with their own personal freedom and enjoyment, Mumford explained in one of his first post-war essays. The recent past had been a nightmare for them, and the future "seemed unlikely to be much better than the present."[20]

In an earlier essay, Mumford, speaking for his generation of young post-war writers, gave his own diagnosis of the problem of the moment. What "our generation" is suffering from, he argued, is "the loss of to-morrow . . . Civilization is the magic instrument by which men live in a world of time that has three dimensions--the past, the present, and the future . . . The drama of the present tends to move in a given direction only when it receives the double impact of the past and the future; and if the past is too frightful for remembrance or the future too cloudy for anticipation, the present ceases to move in any particular direction and teeters fitfully about from point to point." Here was the crux of the modern problem. We are living, he wrote, in a present "divorced from a past and a future." If the younger writers were to fulfill their fabulous potential, they would need two things: a sustaining cultural tradition to identify with, and a vision of a brighter tomorrow to lure them on. To proceed with

promise, they would need both a better past and a better future than they currently carried in their minds.[21]

This is an enormously important argument for understanding Mumford's essential outlook on life, then and later. All of his subsequent work arises from this analysis of the contemporary dilemma, and his entire life can be seen as a connected effort to provide the living tradition and the vision of renewal he called for, while a young writer of only twenty-five, in the pages of Albert Jay Nock's The Freeman.

At about this time Mumford came across a dictum of Taine's that seemed to speak to the modern problem, and suggest a possible solution. "Beneath every literature," Taine had insisted, "there is a philosophy. Beneath every work of art an idea of nature and of life . . . Whoever plants the one, plants the other; whoever undermines the one, undermines the other. Place in all the minds of any age a grand idea of nature and of life, so that they feel and produce it with their whole heart and strength, and you will see them seized with the craving to express it, invent forms of art and groups of figures. Take away from these minds every new grand idea of nature and life, and you will see them deprived of the craving to express all-important thoughts, copy, sink into silence, or rave."[22]

That was it. The current crisis of the spirit called for a new "idea of nature and of life," something with greater draw and weight than the timid Progressive idea of patching the machinery of government, or the misguided socialist notion of redistributing the fruits of a mechanistic civilization. The young were at

bottom, underneath the crust of their disillusionment, yearning for something better to live for than the social dreams of either Marx or John Dewey. "A desirable community must be the product of more mature methods of thought, a more lively appreciation of the human adventure, a more adequate conception of human potentialities (and human inadequacies, too), than any existing set of institutions, or revolutionary substitute, has given indication of," Mumford declared in The Freeman.[23]

The Story of Utopias is a book about the collapse of modern political ideology.[24] Mumford was convinced that World War I, and the political repression that followed it, had exposed the inadequacies of both liberalism and socialism, creeds which had as their common moral foundation that sanguine pre-war faith in irreversible progress through the advance of science, technology and enlightened social engineering. The war had demonstrated for Mumford and others of his generation the inadequacies of the old Idea of Progress, with its tendency to associate technological change with human improvement. Having spent "our adolescence in the shadow of a devastating war and a corrosive peace," my generation can no longer accept this simple belief in automatic progress through science and the machine, Mumford wrote Geddes, who still clung to the "idea of progress" common to the whole age of steam and steel.[25]

Yet while the war had infected so many of his contemporaries with a paralyzing political disillusionment, a distrust of all creeds, Mumford detected in the current crisis of ideology a supreme opportunity. The collapse of the older creeds opened the

way for fresh social thinking, for the appearance of a philosophy of change more aware of the destructive capacity of the machine, and more appreciative of the inner or spiritual aspects of experience.[26]

Although a hopeful book, a book that aimed to give his generation a new vision to live by, The Story of Utopias is persistently anti-utopian in argument and emphasis, as Mumford found most of the classic utopias he investigated "pitifully weak and inadequate." Most modern utopias, he argued, presented the problem of reconstructing society as a simple matter of economic and social reorganization, a fatal error they shared with liberalism and socialism, the principal "partial utopias" of the past century. It was these partial utopias that Mumford was most intent on criticizing.[27]

Many of the problems assumed by liberals and socialists to have their source in the competitive ethic and in the private ownership of wealth were, Mumford insisted, rooted in the fact of industrialization. These were problems such as the rise of the power state, war, environmental destruction, and the growing social hegemony of technocratic and political elites, with the attendant suppression of autonomy and individuality. Neither liberalism nor socialism was capable of meeting and mastering these problems, for both, in their own way, revered technology, efficiency, mass production, expertise, and social engineering.

The need, Mumford argued, was to develop a new philosophy of renewal dedicated to measure, balance and economic sufficiency, not to the achievement of limitless economic abundance. Inner or

value change came first in Mumford's logic of reform. The achievement of the good life would involve more than a reordering of public institutions. This, while essential, would have to be preceded by a transformation of the mechanistic mode of life--the psychological submission to the machine process and the power state--that had created a new personality type--"bureaucratic man"--in capitalist and socialist societies. Mumford called for nothing less than a transformation of the consciousness of industrial man, the creation of a "new humanism," an organic, related mode of thinking and acting that recognized "the inner and the outer, the subjective and the objective, the world known to personal intuition and that described by science [as] a single experience." While some radicals looked for such a value change to occur after the revolution, for Mumford this value change was the revolution.[28]

Mumford's plea for a new humanist synthesis led him straight to an argument for the regional survey as the foundation of any reconstruction effort. The place to begin the process of social change, he declared, was not with the nation, an artificial creation of statesmen and politicians, but with the region. Eutopia, the good place, must be given a local, not a national, habitation.

Mumford urged his fellow reconstructionists to begin by thinking small. Avoid sweeping national crusades for change and start immediately in your own region and locale to lay the basis for the renewal of life, he advised, just as Plato had done in ancient Athens, and as Geddes had done in modern Edinburgh. "Our

plans for reconstruction," he had written earlier in The Freeman, "must be the product of numerous groups, intellectual, artistic, individual, each working out its own problems in terms of its particular environment with no thought of inflicting wholesale methods of solutions upon society at large."[29]

But before men could change their region they would have to know it better; here Geddes's survey would be an indispensable tool. Its aim, after all, was "to take a geographic region and explore it in 'every aspect.'" The outstanding feature of your sociological method, Mumford wrote Geddes in 1921, is its union of "concreteness and synthesis." The solid foundation of "definite, verifiable, localized knowledge" which would emerge from the survey was precisely what Mumford found absent from most radical and utopian schemes, "paper programs for the reconstruction of a paper world."[30] While in synthesizing the work of a number of regional investigators from a variety of fields and professions, the survey avoided, as well, the narrow compartmentalization of knowledge and the restricted vision that so often characterized specialist studies. Mumford considered the survey itself a form of synoptic thinking, a way of seeing life whole, in all its variety and interelationships. It brought together scientists, social scientists and creative artists, and directed their efforts to the service of community life. And as Geddes had shown in his community work in Edinburgh and in India, it was capable of producing realistic plans for civic renewal.[31]

More than Geddes, however, Mumford emphasized the role of the creative artist in the process of social transformation.

Attracted to both sociology and literature, he described a role for the insurgent intellectual that perfectly embodied his twin interests. A systematic sociology, Geddes had taught him, must be linked to a vision of the good life; and in The Story of Utopias he declared it the responsibility of the artist, the poet, the philosopher to help to suggest this. They would bear responsibility for the first, the most important step, in any general reform effort--the reconstruction of our inner world. How? By suggesting in their work images a more balanced, spiritually satisfying life. These could then be interwoven into the plans of the regional surveyors, whose job it would be to suggest flexible civic programs for each of the various regions of the country. Here, in Mumford's view, was a reconstruction scheme "informed by science and ennobled by the arts," with writers, scientists, and social experts working in concert to build not Utopia, a perfect world, but Eutopia, the best place possible.[32]

The cultural awakening Mumford anticipated would appear first, he was convinced, in America, a nation of unlimited promise. And he and other artists would have to prepare the soil for this new world risorgimento. For this they would need not merely a vision of the good life to lure them on, but a sustaining tradition to align themselves with. It was time, Mumford believed, for American intellectuals to end their slavish submission to European culture, and to take a fresh look at our own culture, for there was a vigor and a creative promise there that had been sufficiently appreciated.

In association with Brooks, Waldo Frank, Paul Rosenfeld,

Constance Rourke, and other "scouts and prospectors," Mumford would dedicate most of his working days over the next ten years to uncovering America's buried cultural past. This would be his first contribution to the creation of the new humanism he called for in the closing pages of The Story of Utopias.

Mumford's first book on American culture, Sticks and Stones, was devoted to architecture, which he considered the most important of the social arts. Just before beginning work on this book, he joined up with The Regional Planning Association of America, a group of young architects and planners who were preparing to build American variations of Ebenezer Howard's British garden cities. Students of Mumford's work have tended to treat separately his three principal concerns of these years: architecture criticism; regional planning; and American cultural history. These, however, were inseparably interlinked aspects of a program of social change he sketched out over the course of the 1920s. In these years, he first addressed the great human issues that would be the dominating concern of his career, developed the "organic" method of social analysis that would distinguish all his subsequent writings, and outlined a strategy of renewal that established him as a virtually independent moral force on the American Left.

Sticks and Stones, published in 1924, has probably done as much as any one book in our time to advance the architectural education and awareness of the American public, teaching us how to approach buildings, what to expect from them, and what to demand from those who put them up. It is a study, however, not

just of architecture, but of architecture and civilization, for in Mumford's view, the two are inseparable. From John Ruskin he had learned that "every stone had a tongue, and every tongue could tell a story." Buildings are a record of a community's life and spirit; "Each generation," in Mumford's words, "writes its biography in the buildings it creates." But where Ruskin confined himself to the great landmarks and masterpieces of architecture, Mumford reached out to consider, as well, the simple, vernacular structures--houses, barns, offices, and factories. These, too, were indicators as to "how, why, and to what end people had lived."[33]

The mark and measure of Mumford's architectural criticism is its emphasis upon the whole human complex into which a building is set. A building, for him, is not a free-standing, self-contained entity, to be appraised on its sheer aesthetic merits. It is but one element in a larger civic or landscape design. Inspired architecture, then, demanded inspired city planning.

This conclusion drew him to the Regional Planning Association of America, to architects and environmentalists like Clarence Stein, Henry Wright, and Benton MacKaye. Within a year after he joined the RPAA Mumford became its leading spokesman and theoretician. The regional idea he helped to introduce to America was nothing less than an effort to re-direct the flow and impulse of urbanization, to de-populate the impossibly congested metropolis and relocate people and industry in new medium-sized cities, cut to human scale, with the land socially owned and with the entire community and its surrounding region planned as a whole.

These regional cities were to be strictly limited in size, and surrounded by inviolate greenbelts of farm and park land to prevent heedless physical sprawl. Each regional complex of cities would radiate out from a central metropolis, now reduced in size, with all of the communities interconnected by a rapid transportation system. Although the Regional Planning Association built only two communities incorporating its ideas,--Sunnyside Gardens, Queens, and Radburn, New Jersey--its work is still immensely relevant to our time.[34]

Unless we plan in this manner, Mumford argued in Sticks and Stones, "it will be empty elegance to talk about the future of American architecture." But the way Mumford stated the problem, the future of architecture did not rest with either the architects or the planners. Since society was the principal source of architectural form--"form," as he put it, "follows not merely function, but the way of life"--any real improvement in the frame of civilization hinged on a transformation that was essentially valuative and psychological. In the end, Sticks and Stones is more than a history of American architecture and civilization; it is an argument, as all of Mumford's books are, for a new moral order.[35]

But what specific role would he play in the coming struggle for change? This was the career problem Mumford struggled with in the early 1920s. Since age 15 he had wanted most of all to be a creative writer, but all he had to show for his efforts were an unfinished novel and a drawer full of unproduced plays. There was always criticism; yet he felt that essay writing did not test his

abilities sufficiently. He labored among the "Sophists of journalism" mostly for the money--the little he received for his articles and reviews--barely $15 a week--along with Sophia's modest salary as an editorial assistant, kept them living austerely in a tiny two-room Brooklyn apartment. Journalism also gave him some control over his time, always his most closely guarded possession, as he took on only enough work to leave at least one-third of the year free for uninterrupted stretches of serious study and writing. But what he desperately wanted was a larger theme to give himself to--perhaps a history of American civilization--and a surer sense of exactly what kind of writer he should set out to be.

Caught in an unsettling vocational dilemma, disappointed, also, that his work was not reaching a wider audience, Mumford's spirits hit bottom in 1923. Nor was he in good health, despite outward appearances. The "thin, slightly stooped" Regius of The Invalids had by this time matured into a darkly handsome young man, with a straight back, broad shoulders, flashing eyes and a supremely confident manner. "I thought of Lewis and Sophia Mumford," Brooks wrote of their days together in the '20s, "as a new Adam and Eve, with whom the human race might well have started, for one could scarcely have imagined a handsomer pair. I always felt as if they had just stepped out of Utopia and were looking for some of their countrymen." But in these same years, indeed throughout his life, Mumford continued to slip into periods of extreme exhaustion and depression following strenuous bouts of work, or serious personal setbacks.[36]

Marital difficulties aggravated his health problems. Mumford had entered marriage from a life of complete continence, and was, for the first year at least, an anxious, unsatisfactory lover. When Sophia continued to express interest in other men, he was driven to extreme jealousy and self-pity. Despite his reserved, outwardly impeccable manner, he was a man of strong, what he himself described as "violent," sexual passions; and he feared that, in addition to jeopardizing his marriage, these sexual strains might dangerously affect his work and his emotional balance.

Mumford would not resolve his deepest emotional difficulties with Sophia for at least another dozen years. But by late 1924 the tensions of their relationship had eased enough for them to decide to have a child. Still, for Mumford, there remained the problem of a proper career. He would be a writer, certainly; but what kind of writer?

"What <u>am</u> I?" he asked himself in his notes, "a Journalist? a novelist? a literary critic? an Art critic? a scholar? a sociologist? <u>Must I take a definitive line</u>?" By 1925 he had become convinced, mostly by the example of Patrick Geddes's many-sided life, that he did not, in fact, have to take up any one profession. He would instead assume his master's "coat of many colors," renouncing "the rewards . . . of the specialist" for a career as "a 'generalist', one who is more interested," as he once said, "in putting the fragments together in an ordered and significant pattern than in minutely investigating the separate parts." In making this decision, Mumford, as one writer

has remarked, "virtually invented his own career," shaping an independent and original place for himself in American letters.[37]

Although he only dimly realized it at the time, this was a decision in near-perfect alignment with one of his greatest natural talents--an unmatched facility for synthesis. "It wasn't till I took a Rorschach test [in 1947]," he boasted to Frederic Osborn in 1963, "that I became fully conscious of the fact that I had an unusual ability, amounting to genius, for bringing widely separated observations together into a meaningful pattern: I got more out of one particular blot than the tester had ever found anyone else doing!"[38] The doctor who administered the test also told him that he had an unusually balanced personality. The test showed a conflict between "the artist and the scientist," but Mumford was advised that there was nothing "necessarily harmful" in this. "In fact, such opposition often provides the incandescence essential to certain rare types of creative production."[39]

In 1925, moreover, Mumford, at age 30, settled upon the great theme of his entire career as a generalist--to describe "what has happened to the Western European mind since the breakdown of the medieval synthesis, and to trace out the effects of this in America." In the Middle Ages he knew from his reading of Ruskin, William Morris and Henry Adams, he found an ideal balance between man's emotional and rational sides, his spiritual and material concerns, that had disappeared, for the most part, in the one-sided age of science and rationalism that followed. In tracing this transition from an integrated culture and process of thinking to a divided, or fractured, culture and process of

thinking, he hoped to draw upon the best of the organic tradition in the historic heritage to fashion a "new humanism" for his day. This was a hugely ambitious undertaking, and, to a friend, Mumford confessed to be "a little frightened" by the size of the task. But he gave himself to it for the next half century.[40]

He would call his first book on this theme The Golden Day. The Golden Day he evoked, however, was not Europe in the age of walled towns and soaring cathedrals, but America in the heroic period of Whitman, Emerson, and Melville. In the work of these writers he found a living link between the Middle Ages and the pressing needs of his own time. In three boldly original books, written one after the other--The Golden Day, Herman Melville, and The Brown Decades--he did more than chart the rise and decline of the organic outlook in America; he located in the work of the literary greats of mid-century America a rich native tradition in philosophy and the arts which he hoped would serve as a creative source and inspiration for the movement toward renewal he was calling for simultaneously in his essays for the Regional Planning Association. Considered together with Sticks and Stones and his essays on regionalism, these writings present a unified, beautifully interwoven interpretation of the entire course of American civilization. They are independent ventures over largely unsurveyed terrain, works which established Mumford as the founding spirit of the American Studies movement.

In his work for the RPAA he had been urging a union of planners and poets. He had already begun to suggest a program for the planners; now he turned to the poets, who, as he had told

Geddes, would prepare the mind for the New Jerusalem.

In The Golden Day, Mumford described the settlement of America as the "culmination of one process, the breakup of medieval culture, and the beginning of another," the age of science, rationalism, Protestantism, and capitalism. The European arriving in America, he argued, continued a process already underway in Europe, a process which began in the thirteenth century when men in cities began to measure time instead of focusing their attention on the hereafter. When the bells began to toll in belfries and campaniles all over Europe a new world awakened. Soon precise mechanical clocks were invented, and skilled craftsmen began to measure not only time but "millimeters, too; and with the knowledge and technique introduced by the clockmaker" the best minds of the time moved forward to invent "the telescope, the microscope, the theodolite--all of them instruments of a new order of spatial exploration and measurement."[41]

With the new concern for time came a closely related interest in "space"; and with this there emerged a veritable passion for map-making, geography and long-distance exploration. "So time and space took possession of the European's mind . . . The bells tolled, and the ships set sail."

When Europeans settled in America they brought with them this "abstract and fragmentary" culture with its single-minded preoccupation with the observable world of matter and motion, with that which could be "observed, measured, . . . and, if necessary, repeated."[42] They brought with them, too, the emerging

ideas of democracy, Protestantism, and capitalism. Here in the soil of the New World these ideas took firm root, producing over time the characteristic American, with his commitment to individual freedom, hard work, invention, science, and money-making. "Positive knowledge and practical action, which are indispensable elements in every culture, became the only living sources of our own."[43]

From the beginning, the besetting problem of the American writer was how to survive in this one-sided utilitarian culture, with its undervaluing of the passional and poetic sides of experience. Instead of challenging this new "idolum," as he called it, and trying to come up with something better, many of our finest writers, from Benjamin Franklin and Jonathan Edwards to Theodore Dreiser and Mark Twain, merely acquiesced to it, taking as their standards of achievement those of the prevailing culture. A "barbarous and inadequate environment"--the culture of the quick buck and the easy answer--"curbed and crippled" even the best of them.[44]

In developing this argument Mumford drew freely on the work of Van Wyck Brooks. Yet The Golden Day differs in an important way from Brooks' earlier work on the American literary imagination, as Mumford found in the procession of American development two periods of achievement and integration: one distinguished by its handsome accomplishments in the arts of architecture and community design; the other in the art of producing sound and balanced human beings. In these two periods America came as close as it had yet come to producing the synthesis that Mumford

considered the signal achievement of the age of the cathedrals.

Before the westward migrations of the foot-loose Pioneer and the complete triumph of the new outlook in America there was, he pointed out, a brief period of order, balance, and settled development. In the "provincial period," in the hamlets and towns of the Northeastern seaboard, "the Middle Ages at their best lingered" for a time. The orderly New England village, with its communal traditions, its balanced economy of farmers, craftsmen and traders, and its consensual dedication to common spiritual ends was "the capital example of the medieval tradition" in America. Veritable earlier day garden cities, these well-planned communities had placed clear limits on their physical growth; the town's land, moreover, was distributed according to need and function, not profit. Mumford saw the Puritan towns' functional, harmonious style of building and design--the work of craftsmen immersed in the tradition of the guild--as the natural organic outgrowth of a "common spirit, nourished by men who had divided the land fairly."[45]

This was the idea he had sketched out in Sticks and Stones; only in The Golden Day he insisted that this felicitous village culture was not confined to seventeenth-century New England. Similar communities were planted on the Atlantic seaboard and up the river valleys well into the nineteenth century, in what he called the "first" America, "the America of the settlement." By 1850 these communities had reached the peak of their development: they had "worked out a well-rounded industrial and agricultural life, based upon the fullest use of their regional resources

through the water-wheel, mill and farm, and they had created that fine provincial culture . . . which came to a full efflorescence in the scholarship of Motley, Prescott, Parkman and Marsh, and in the literature of Emerson, Thoreau, Melville, Whitman and Poe."[46]

In the period of the young Melville "the old culture of the seaboard settlement had its Golden Day in the mind." The five towering figures of this new world renaissance--Emerson, Thoreau, Whitman, Hawthorne, and Melville--were, for America, new types of personalities, combining intellectual insight with emotional openness, and they were full of the promise and potential of their country, a quality that gave their work a clear morning freshness. Each possessed what Mumford called "complete vision," that quality he most admired in the thought of the middle ages: matter and spirit were, for them, not separate but interrelated "phases of man's existence." And while they drew upon the wider cultural inheritance of Europe and the ancient East, they did not return to the past for their model of culture, as so many European writers of the nineteenth century had done. They welcomed the new forces of exploration, science, steam power, and democracy, absorbing them into their work to create a fresh outlook and orientation. "Need I recall," Mumford wrote, "that Whitman wrote an apostrophe to the locomotive, that Emerson said a steamship sailing promptly between America and Europe might be as beautiful as a star and that Thoreau, who loved to hear the wind in the pine needles, listened with equal pleasure to the music of the telegraph wires?" That machines and inventions were things to be worshipped never occurred to these writers; but they

were not blind to the fact that they added "a new and significant element to our culture" which the poet ought to be ready "to absorb and include in his report upon the universe." Mumford judged this mingling of the "social heritage of the past with the experiences of the present . . . the great activity of the Golden Day."[47]

But, most of all, the Golden Day was for him a moment of Geddesian "insurgence." Its great literature, particularly the powerfully expressive poetry of Whitman, was as an active, "formative" literature, forward-looking and vibrating with the promise of life, a literature aimed at inspiring a new spirit, a new personality, a new America.[48]

Yet as much as he loved the literature of the Golden Day, it was the kind of personalities that this age produced that seemed most vividly important to him. "This period nourished men, as no other has done in America before or since." These were writers close to the soil yet in touch with all the new movements of their age, non-specialists who could shift easily from one area of life to another, thinkers not unfamiliar with manual labor. Whitman had been a printer and a housebuilder; Thoreau a surveyor and a pencil maker; and Melville a common sailor.[49]

This was the New Man Emerson had celebrated; and of all the writers of the Golden Day "this great gun of Transcendentalism," as Whitman once described him, had the largest continuing influence on Mumford's life. But it was the "more robust" Emerson of the Journals, not the "transcendentalist ghost lingering in the popular imagination," that he most strongly identified with.

He had begun reading the Journals as a student, while waiting for his books in the South Reading Room of the Central Building of the New York Public Library, and for the rest of his life this Emerson served him as a kind of "older brother," always there when he needed him, with sage council and soul-filling inspiration.

In Emerson Mumford found a man much like he himself wanted to be, a man in the image of his early mentor, Plato. Both men, as Mumford saw them, were at bottom moral reformers; yet instead of busying themselves "with the little details of political or economic readjustment" they had sought to create "a pattern which would permit the details to fall into place, and so make a creative renovation." That, of course, is exactly the role Mumford was attempting to fashion for himself, the role of the moral philosopher, the thinker concerned primarily with fundamentals, with values. With Emerson, he would fearlessly speak out against the injustices of his day, but would refuse to join "any political sect or cult." That sometimes isolated him, and made him less effectual in the short term; but it allowed him to keep his inner integrity intact and his ideas remarkably consistent through an obstinate life-long struggle for a reconstructed world.[50]

"Nothing is sacred but the integrity of your own mind." That, for Mumford, was the kernel of Emerson's central doctrine, the idea of self-reliance. Later, on the occasion of his daughter Alison's graduation from Radcliffe (1958), he spoke of what he found eternally significant in Ralph Waldo Emerson. "Your main

need," he counseled the graduates, "is to have a firm inner center, based on your sense of your own identity and your own work: an affirmative self-respect that no institution, no outward circumstance . . . can violate. Your own Yes and No is what matters."

Emerson had not closed himself off from social causes. "But he knew that our natural involvement in society would become a nightmare if it were not counterbalanced by seasons of withdrawal and solitude." This is what recharges and reaffirms our capacity for self-direction, and without that capacity for self-direction, Mumford told the Radcliffe graduates, "we shall become the victims of a culture that is steadily expanding its power and productivity in every dimension, while it allows the very core of our life to become hollow and dismally empty."

Finally, Emerson, with his friend Thoreau, saw that our life "would have to take on a certain handsome bareness and simplicity, it would have to be 'all beautiful with omissions,' if it were to achieve the only gifts that are worth exchanging outside the market place: the gift of ourselves." As Emerson had put it so well: "We owe man man."[51] All his life Mumford lived close to this idea of Emersonian simplicity, even at the peak of his influence and earning power.

We could never, of course, return to the age of Emerson, Whitman and Thoreau; but the work of its greatest minds was never more relevant than now, Mumford declared in the final pages of The Golden Day, when machine civilization was threatening to create a race of one-dimensional conformists and pecuniary

achievers.

* * * * * *

On completing The Golden Day Mumford must have realized that he had, in fact, written two books: one a boldly positive assessment of the power and potential of American culture; the other an uncompromisingly negative assessment of its gravest defects. The Civil War stands out in the book as the great dividing point in American development.

In the years following the Civil War America's promising regional civilization, in Mumford's view, was steadily undermined, as manufacturing, finance, and culture were drawn to the growing metropolitan centers. Power and profit were the dominant drives of the new metropolitan economy; and the whole rhythm of life was gradually adjusted to the monotony of the machine process. All this had a blighting impact on literature and the arts. The novelists and philosophers of the Gilded Age, with certain brilliant exceptions, either acquiesced to the age, "idealizing" the new industrial values and practices, or retreated, with Santayana, to the past, to a foreign "externalized" culture as an orderly alternative to the ugly turmoil of their time.[52]

These were the Brown Decades of our culture, the somber autumnal days after the stormy summer of the Civil War had "shook the blossoms and blasted the promise of spring." Society took on a new physical appearance--darker, dingier, drabber, "adapting its colouration to the visible smut of early industrialization." Yet beneath the "crass surface" of society--in the works of

certain insurgent spirits, many of them working in the practical arts--Mumford found a new life stirring. His heroic figures were the architects and master builders--Lewis Sullivan, Frederick Law Olmstead, Henry Hobson Richardson, and particularly the Roeblings, John and his son Washington, whose Brooklyn Bridge, "a poem in granite and steel," was the commanding achievement of the age. They were men of their century who had accepted the "vital impulses" of the industrial age, turned them to aesthetic ends and produced grand native works of art. Mumford summoned his own generation to take inspiration from these earlier makers and finders and carry on the work they had begun so well--humanizing the landscape and the city, and creating a uniquely modern art and architecture.[53]

The signs, he believed, already pointed to a revival of regionalism. In the writings of Mid-Westerners like Sherwood Anderson, Willa Cather, and Carl Sandburg, and Southerners like Howard Odum, John Crow Ranson, and John Gould Fletcher, and in the architecture of Frank Lloyd Wright, there was a renewed interest in region and place. While the economic basis of this emerging culture was the technological revolution that had produced the automobile and long-distance electrical power transmission. These developments spelled the end of the old centralized economy of coal and steam, and the beginnings of a new regional dispersal of industry and population. Mumford's interpretation of American development thus led directly to an argument for the regional city, which was, he concluded, nothing more than an update and extension to the whole continent of "that

stable, well-balanced, . . . cultivated life which grew out of . . . [America's] provincial settlement."[54]

In all of Mumford's work there is an active interplay between past, present, and future. We see this most vividly in his regionalist interpretation of American civilization. For literary prophets like Mumford and Van Wyck Brooks, the "spiritual past" had no "objective reality." It was the responsibility of each generation to recover and reshape the past to its own purposes, to rewrite history in behalf of a better future. This was the aim of all his books on American culture. The creative artists and builders were to head his regional movement, and they are, not surprisingly, the central, formative figures in his history. "To the artist," Whitman had said, "has been given the command to go forth into all the world and preach the gospel of beauty. The perfect man is the perfect artist."[55] In their lives and in their work, they personified what he saw disappearing in the current, one-sided age of specialization and mechanization. Creative, balanced, and self-governing, they had dreamed Thoreau's dream of what it meant to live a whole human life. "To be alive, to act, to embody significance and value, to be fully human . . . My utopia," Mumford wrote in 1930, "is such a life, writ large."[56]

Mumford, the moral historian and forecaster, does not leave us, then, without "any definite prophesy," as Norman Foerster once charged, "all dressed up with no place to go." The prophesy, the ideal, is there in generous detail, in books like The Golden Day and in his essays on behalf of regionalism. Mumford,

unfortunately, never brought together this complementary work on regionalism and cultural history into a book-length synthesis; but in his own mind they formed an interconnected program for the renewal of American culture, with insurgent artists like himself in the vanguard.[57]

Mumford's works on American culture have considerable amplitude and historical sweep; but he never intended them to be all-inclusive accounts of those aspects of the native experience they treat. They are works of synthesis, certainly, but of critical synthesis. They place already known details into new configurations, and these configurations, these organizing metaphors, bear the unmistakable stamp of his own philosophy and values. His canons of historical selectivity, what he chose to include in these books and what he chose to leave out, were influenced at every point by his very personal conception of the good life. He begins with a view of what a culture should be, ideally, and then critically assesses the past with this as his standard of judgment. This is not history for its own sake; it is history for our sake; and on every page there are lessons and portents.

It is history, moreover, that "embraces the potential and the possible as a necessary part of any adequate description of a human institution," as Mumford once described his own method. For him the past, the present, and the future are one continuous, interconnected process.[58] It was, then, Mumford's sense of the promise of the future that enlivened his interest in the past. While some scholars might be put off by this bold endeavor to

engage history in behalf of a better future, there is in Mumford's work a bedrock faith in the power of history as a humanizing instrument that we are not apt to find in most current scholarly history. No writer of our time has done more to encourage us to be mindful of our past.

History, in Mumford's hands, becomes a form of moral diagnosis and therapy. Man, he claims, has no fixed nature, only his history. In order to move forward with promise, a society must have a grounded understanding of its character and potentialities; and it is to history that we must go for this kind of self-knowledge. Where and when did human development go wrong? And how might we reinstate the balance? These are the connected questions that inform all of Mumford's studies of culture, in the 1920s and thereafter. But history, in his view, can show us more than where and when we have gone astray. With Brooks, Mumford looked to the past as "an inexhaustible storehouse of apt attitudes and adaptable ideas."[59] In certain personalities, ideas, and cultural practices of the American past he located sources for the renewal he awaited in his own lifetime.

A student of Patrick Geddes, the biologist, Mumford sees history as the record of an ongoing intercourse between the organism and its environment. At times, man submits to external conditioning and loses control over his direction and destiny; but on occasion, in rare moments of "insurgence," he achieves transcendence, becomes a maker of his own history, an artist, a builder, a balanced personality. It was crucially important, in

Mumford's estimation, that we always have before us records of such feats of insurgence, to give us the self-confidence and inspiration to wage unending war in our own time with the overruling forces of machine civilization. The most important reminder history offers us is that we do have free choice, our own Yes and No, if only we choose to exercise it.

Mumford's history is itself a powerful form of cultural criticism. But it is cultural criticism of a special kind. Mumford gives little attention to politics or to class action, yet his viewpoint, while fashioned primarily in aesthetic terms, is, nonetheless, sharply social and political in aim and intent. "Mumford's aesthetic of history," as Alan Trachtenberg has argued, "shaped itself primarily in antagonism to new formations in culture [the Dutch historian Johan] Huizinga described in the phrase 'transitive culture,' formations embodied in Behaviorist psychology and a general mechanization of thought." Huizinga, in his work of the 1920s, which Mumford did not read until years later, spoke of a "psychological terrorism" in American culture, and in Behaviorism in particular, which dismissed all realms of experience which could not be counted, measured, or observed. Behavior, not consciousness or meaning, was what ultimately mattered to those who clung to this point of view. This reduction of everything to behavior, Huizinga claimed in his visit to the United States in 1926, opened up the dangerous "possibility of a reconciliation with a mechanized, leveled-down society, in which productive energy is transferred from the living arm and fixed in the dead tool." In Pragmatism as well as Behaviorism, moreover,

Huizinga found an "antimetaphysical attitude of mind," which "automatically includes an antihistorical one." The exact description of the past was more important than establishing some sort of living continuity with it.[60]

"Our freedom of choice," Mumford once wrote his old Freeman editor Alfred Nock, "depends upon our ability to make use of the past, and when we lose this, we become slaves of the immediate, do we not?"[61] Yet, while vitally concerned with the past, he never suggested a mere ransacking of history for moral standards; nor are his historical essays exercises in nostalgia. The examples of insurgence and organic balance he found in the social heritage were to serve notice of what was missing in the modern mode of life and thought. But Mumford insisted that each generation confront the actual conditions of its time and pattern, its own uniquely modern culture and mode of art, making use of the best of the past and the present. With the ancient Athenians he held to the idea that all healthy civilizations depended upon a fine balance of forces, an equilibrium between tradition and innovation, and that when this was upset they inevitably decayed.

Mumford's historical recreations, with their direct effort to evoke an emotional evaluation, to critically encounter the past from the perspective of both the present and the future, can be excessively preachy; and they do contain some unintended distortions of the human record. They are histories, however, that challenge some of our most firmly planted assumptions about Western material development, works characterized, as one

historian has said, "by a certain fearlessness of imaginative insight . . . reminiscent of Blake," and by an almost unequaled ability to see familiar phenomenon in a new way.

What Mumford wrote of Herman Melville can be said equally of him: he had by age thirty acquired "mastery: . . . he could take a hundred dispersed facts and weave them into a solid pattern." In the final analysis, Mumford's American studies are testimonies to the genius of his decision to set out to be a generalist; for while they cut into plenty of undiscovered territory, their outstanding mark is their ability to bring together long-neglected, widely-scattered materials into new, imaginative configurations. They are among the most sparkling works of historical synthesis in the English language.[62]

With the publication in 1931 of The Brown Decades, his fourth and final book on American culture, Mumford secured his reputation as a writer of the first rank, a respected, all-around man of letters, not just an architecture critic. And while some might dispute his claim, he saw himself as a revolutionary as well. The difference between the pre-war socialists and "those of us who have survived and kept our wits," he wrote Van Wyck Brooks, "is that they, essentially, were contented with an uprising, which would transfer power from one class to another, whereas we want . . . a revolutionary social change which will displace a mean and inferior kind of life with a completely different kind. An uprising means a new deal; a revolution means a different kind of game."[63]

The coming years, he believed, would be the "critical years"

for himself and his country.[64] The recent economic depression had exposed the weaknesses and inadequacies of capitalism, and would make the next decade one of unprecedented crisis and opportunity. Never before would the opportunities for far-reaching change be greater, or the possibilities of complete social collapse more likely. The economic crisis would be long-going, he suspected, and eventually an increasing number of Americans would begin to question the present economic and social system. When this began to occur, he wanted to be ready to give the unformed rebellion sound guidance and direction. Like so many other radical intellectuals, Mumford welcomed the depression as a supreme social opportunity. Here finally was the crisis that might offer him an opportunity to lead.

The problem, however, was that he could find no one political party or insurgent group to align with. By urging an almost religious transformation of the personality as the prerequisite for any real social revolution he cut himself off from all the progressive groups working for social change; and throughout the decade, indeed to the end of his life, he maintained an almost Erasmian aloofness from all organized political movements, believing that the changes he stood for would have to come "directly," as he told a friend, "to each living soul."[65]

Yet while he remained politically isolated, this was not by choice. "Whilst philosophers debate," he took Schiller's words as a warning to himself, "hunger and love are settling the affairs of the world."[66] Mumford craved public influence, more perhaps than he cared to admit. Unable to find a reform philosophy

congruent with his views, he set out in the 1930s to frame his own, urging his friend Waldo Frank to join him in creating "not a new political party, which is not our talent, but a party of ideas, which would in time lead toward political action."[67]

"We must have something better than the official Communist party in this country, even if you and I have to take off our shirts and create," he wrote Edmund Wilson and Malcolm Cowley in 1932.[68] And that is exactly what he proposed to do in the big book he was then mapping out in his mind, the book that would become Technics and Civilization, the first volume of his Renewal of Life series.

Plagued as an adolescent by recurring sickness and disability, Mumford had ordered his career up to this point on the assumption that he would probably not live beyond forty, "so that every work was conceived and finished," he confided to Van Wyck Brooks in 1931, "on a limited scale, with a short breath, as it were, as though it were my last!"[69] Now at age 35, feeling at top strength, he was ready to give himself completely to the master work that would seal his reputation and gain him greater public influence. "Now was the time," as he had earlier written of Herman Melville, as that titan prepared to begin Moby-Dick, "for a great leap, a leap which would gather all [his] powers together and focus them on an object of epic dimensions, a Typee, a Mardi, a Redburn, a White Jacket, all in one."[70]

"To produce a mighty volume," as he had further said of Melville, "you must choose a mighty theme."[71] His own master theme, he now decided, would be nothing less than the making of

the modern world and the modern mind. "Our main duty at the present," he explained in an essay of 1931, "is to clarify our sources, to discover what elements in the tradition of the Renaissance, of Romanticism, the Revolution, Naturalism and Mechanism are permanent ingredients of a culture that is still to emerge, and to project a basis upon which they can be integrated with new elements in our life and thought." This, for Mumford, was the chief office of contemporary cultural criticism, and the underlying aim of the Renewal of Life series--to formulate, on the basis of a thorough sounding of history, a design for a new kind of revolution.[72]

Before he launched into this encompassing literary task, however, Mumford passed through a trial that almost broke his spirit. This was his "period in Purgatorio"; and it prepared him to meet in a more mature and sobered fashion the whole rest of his life.

His crisis had its origins in his earlier struggle with Herman Melville. In 1927 Mumford began writing a biography of Herman Melville. Up to this point, Melville had played no great part in his life comparable to that of Emerson, Whitman, or Thoreau. But in approaching closer to Melville, Mumford discovered a kindred spirit--whose problems, pressures, and pressing personal concerns were similar to his own. What began as a modest critical study turned into a daringly speculative inquiry into Melville's life and mind, a book that discloses as much about Mumford as it does about Melville. Herman Melville is Mumford's most self-revealing book and the most direct expression of his

matured moral outlook.

Mumford wrote Herman Melville in a great creative surge, completing the book just over a year after beginning the research. Throughout the writing he remained in his usual buoyant spirit, his sails stretched full, confident he was writing his best book so far. But on completing the final draft he was thrown into a state of mental exhaustion and acute depression, the same sort of gray despair that had come over Melville after he completed Moby Dick. "I felt myself," he recalled years later, "being sucked down helplessly into [a] whirlpool, unable to overcome the unconscious forces that were threatening to drag me to the bottom. This was the Cape Hatteras of the soul that Melville had prophetically warned about . . . ." And at several times during this period Melville's words came back to him:

> 'But sailor or landsman, there is some sort of Cape Horn for all! Boys! Beware of it: prepare for it in time. Greybeards! thank God it has passed.'[73]

Mumford's intensely personal exploration of Melville's dark and tormented life brought to the front emotional and sexual problems he had been struggling with since adolescence. In describing Melville's dilemma he, in truth, described his own. Herman Melville, he wrote, might have seemed to others "a pale, scholarly man, immersed solely in things of the mind; but what a caricature that apparition was of the actual man!" Behind that grave, straight-backed, reserved manner there was a fiercely passionate man "who in his marriage had kept to the letter of the pledge, and yet found himself struggling against its spirit--

struggling, yet paralysed . . . If only he could remake himself, or free himself from this disturbance . . . this feeling of disunity, this being but half of a mismatched whole."[74] For Mumford, however, this sexual blockage was merely part of a deeper emotional problem.

In his various writings, particularly on the Olympians of the Golden Day, he had pressed incessantly for a balanced life, one that gave release to the passional as well as the rational side of our make-up, that gave equal weight to mental work and to full-bodied living. At several points in his biography he portrays Melville as such an ideally balanced man, a poet and a sailor-adventurer, a many-layered personality who "faced life and death, not as abstractions, but as concrete events."[75] Yet his own psychological interpretation of Melville directly contradicts this. Although he never quite admits it, the Melville of his biography was suffering from a crisis of the divided self; and so, it seems, was he.

As a young sailor, while living as a wounded captive in the valley of the Typees, Melville met an enchanting Polynesian maiden, Fayaway, who served as his nurse and constant companion. Mumford does not make much of this relationship in his account of Melville's life, but after finishing the book, as he began to search Melville's life for clues to his own dilemma, he convinced himself, by an act of sheer speculation and perhaps psychological transferrence, that this innocent encounter with Fayaway "had possibly broken the crust that had covered an erotic volcano." Although attracted to Fayaway, Melville escaped to civilization

and after his marriage and for the remainder of his life attempted to bury in the canyons of the subconscious the exotic feelings she had aroused in him. But these urges remained dangerously near the surface and emerged full-blown in Pierre, the embarrassingly crude psychological melodrama he wrote immediately after Moby Dick. In his biography, Mumford found in this novel and in Melville's subsequent poetry strong evidence of his "sexual blockage"; but it was not until later that he connected this with Melville's passionate feelings for Fayaway.[76]

"From my reading of Melville's life I read a lesson for myself;" he wrote later, "and as the months passed, with my book finished, I found myself ever closer to the mood in which Melville, in far deeper desperation, had written 'Pierre.' Melville's shattering experience . . . served as a warning and spurred me to follow another way than that which caused him to wander for the next decade or two through the bleak waste land of tormented chastity and self-renouncing loyalty."[77] It was in this way that he chose to take Melville's life as personal warning, resolving to give fuller release to his own sexual and emotional urges.

Up to now, his outward reserve and self-control, the result, as he had once told his wife Sophia, of a "sheltered and solitary" upbringing, prevented him from acting on his innermost desires.[78] He had been trying to overcome this, but even many of those closest to him continued to see him, as he had once characterized himself in one of his earliest plays, as a disembodied intellectual, more head than heart. At this point, "I

finally recognized how different the inner man was from the outer one," he wrote his friend Henry Murray, and determined to do something about it.[79]

Throughout this crisis Blake's lines rang constantly in his mind: "Sooner throttle a babe in its cradle than nurse an unacted desire."[80] He was determined, as he wrote in his notes in the late summer of 1929, to avoid the fate that had overtaken Melville partly through his "suppression" of his "libido."[81] Later that year he met the woman who changed his life.

Catherine Bauer, a striking young woman with blonde hair and sharply chiseled Nordic features, was a brilliant student of housing and architecture, with a fresh mind and driving enthusiasm. Soon after meeting in 1929 in the offices of Harcourt Brace, where Bauer was in charge of advertising, she and Mumford fell into an emotional relationship that lasted into 1934. Though this affair with Catherine almost wrecked his marriage, it had a salutary impact on Mumford's work and his emotional health. The sexual exhilaration he found with her helped him to break through his emotional blockages and released energies for his future work. Bauer also became his most trusted intellectual associate, the only one to whom Mumford has ever shown the very first draft of anything he has written.[82] In her enthusiasm for his work, she urged him to take on larger projects that would stretch him to his limits. Mumford likened her liberating role in his development to that of Hilda Wangel in Ibsen's play--exhorting the Master Builder to quit building modest houses and "to erect instead an audacious tower," at any risk.[83] For the first time

Mumford felt he was close to achieving in his personal life the intellectual and emotional balance he had set as the supreme aim of his life. For the first time, he felt himself fully mature, ready at last to undertake the epic work he had been preparing himself to write for the past ten years--a sweeping survey of the development of the machine, the city and the personality from the Middle Ages to the present.

At age 35 Dante is said to have had a vision of awakening in a dark, trackless wood and finding his way to paradise. Mumford was about to turn 35--"the middle of the journey of our life," when many other writers, including Walt Whitman, recognized themselves at a crucial crossroads--and for the first time in his life he felt fully mature. "When the top of this arch of life may be, it is difficult to know," Dante wrote. "I believe that in the perfectly natural man, it is at the thirty-fifth year."[84]

That conviction, that new sense of maturity, was related to his recent reading of Dante's Divine Comedy and to his immersion in Dante's world through Karl Vossler's magnificent study of the poet. In the end, Dante's philosophy of good and evil, no less than Melville's, helped him to find his way out of the "rough and stubborn wood" into which he had stumbled.[85]

As a very young man Mumford had put up impossibly high moral standards for himself, resolving to seek perfection in his life and in his world. As he now told Catherine Bauer: "Neither evil, nor ugliness had any part in my view of a desirable world: I conceived that the mission of intelligence was to stamp them out . . . I was saved, if indeed I am saved . . . by the

[discovery] . . . when I was strong enough to take an honest look at myself . . . that I was neither so virtuous, so faithful, nor so inhibited as I had made myself out to be. Conclusion? Damn utopias! Life is better than utopia."[86]

Mumford pushed the point to an extreme here; he had never been an innocent believer in the perfectability of man; even his book about utopias was an avowedly anti-utopian tract. But undeniably, from his Melville biography on, he placed greater emphasis in his work upon the impossibility of any final or complete resolution of the social problem and of the unavoidable tragedy of the human condition. The deteriorating state of civilization, the onset of an age marked by economic depression, fascism, total war, and nuclear annihilation influenced him in this direction; but just as important was his confrontation with Herman Melville. "Humanity," he wrote Bauer not long after completing his Herman Melville, "would starve in utopia . . . ; for a good spiritual diet must contain a certain amount of phosphorous, iodine and arsenic, although they are poisonous if taken in large quantities. The problem of evil is to distribute the poison in assimilable amounts."[87]

Mumford's own recent experience--the enthusiastic critical reception of The Golden Day, followed by his descent into a hell of his own--convinced him that Dante's poetic rendering of the Inferno, the Purgatorio, and the Paradiso was "a true picture of mankind's historic experience and daily life." Truly "heaven and hell and all that lies between are, in varied measure," he wrote, "everyone's daily portion from cradle to grave." Having reached

this point, he could at last face his problems, setbacks and conflicting emotional loyalties as nettlesome but unavoidable aspects of all human lives. He was also able to accept his affair with Catherine Bauer and immediately after that an affair with a friend of Catherine's, as part of "life's unexpected blessings," even though these relationships disrupted his marriage and his disciplined career pattern.[88] As he had written of Herman Melville, almost in justification of his own future decision, that genius failed to realize "that the lust of the satisfied man is comparably more cleansing to the spirit than the tormented chastity of the unsatisfied one."[89]

Was all this a complicated spiritual rationalization for what his libido and his ego had been driving him to do for some time? Nothing is so simple; but certainly these inner drives and desires brought on the crisis out of which he formed his revised view of experience and of himself. And once he had done this there was no turning him back. "In some ways," Sophia once told him, "you are the most exasperating man--because you are so sweet--and so absolutely ruthless."[90]

To cling to the hope that evil and injustice can be wiped clean from the world is "to cling to an existence without perspective or depth," he wrote in a 1930 essay, "What I Believe," which prefigures the spirit and intent of his work of the next several decades. Yet, for him, not to combat evil and injustice was the worst of all human surrenders. This was the sobering moral lesson he took from those brother spirits, Melville and Dante. In this spirit, Mumford continued to work for

great changes in the world, "to a wage contention," in Shelley's words, "with the times' decay," no matter how impossible the odds.[91]

NOTES

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[2]Lewis Mumford, "Reflections: Prologue to Our Time," The New Yorker (March 10, 1975), 42-46.

[3]Lewis Mumford, Sketches From Life: The Autobiography of Lewis Mumford (New York: The Dial Press, 1982), pp. 25-56.

[4]Lewis Mumford, "A New York Adolescence: Tennis, Quadratic Equations, and Love," The New Yorker, XIII (December 4, 1937), 86-94.

[5]Mumford, Sketches, p. 161; Mumford, "New York Adolescence," pp. 86-94.

[6]Mumford, Sketches, p. 133; Random Note, 1915, Lewis Mumford Papers, Van Pelt Library, University of Pennsylvania, Philadelphia, PA [hereafter cited as LM Mss; Random Notes hereafter cited as RN]; Mumford, "My Literary and Intellectual Lineage," unpublished Mss., August 20, 1963, LM Mss.; Mumford, "New York Adolescence," pp. 86-94.

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[8]Mumford, The Human Prospect, edited by Harry T. Moore and

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[9]Patrick Geddes, City Development: A Study of Parks, Gardens, and Culture-Institutes (Edinburgh: Geddes and Co., 1904) and Geddes, Cities in Evolution (London: Williams & Norgate, 1914) were the two books that had the greatest impact on young Mumford.

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[11]"The Invalids," an unpublished play, LM Mss.

[12]Mumford, "A Disciple's Rebellion: A Memoir of Patrick Geddes," Encounter, XXVII (September 1966), 11-21.

[13]Mumford, The Culture of Cities (New York: Harcourt, Brace and Company, 1938), p. 3; Mumford, RN, January 1936; Draft of Sketches from Life, August 28, 1980, LM Mss.

[14]Geddes, The Evolution of Sex (with J. Arthur Thomson) (London: Scott, 1889); Geddes, Chapters in Modern Botany (London: John Murray, 1893); Geddes, Outlines of Biology (with J. Arthur Thomson). 2 vols. (London: Williams & Norgate, 1931).

[15]Mumford, "Mumford on Geddes," Architectural Review, CVIII (August 1950), 81-87; Mumford, Human Prospect, p. 115; for Geddes's life see, especially, Paddy Kitchen, A Most Unsettling Person: The Life and Ideas of Patrick Geddes, Founding Father of City Planning and Environmentalism (Saturday Review Press, E. P. Dutton and Co., Inc.)

[16]Mumford, "The Little Testament of Bernard Martin, Aet. 30," reprinted in Mumford, Findings and Keepings: Analects for an Autobiography (New York: Harcourt, Brace Jovanovich, 1975), p. 125; Mumford, "Disciple's Rebellion," p. 16.

[17]Mumford, "Disciple's Rebellion"; Sketches, pp. 318-332; interview with Mumford, December 13, 1979; Mumford, RN, September 11, 1925, LM Mss.

[18]Mumford, "Bernard Martin," in Findings and Keepings, p. 134.

[19]Van Wyck Brooks, Days of the Phoenix: The Nineteen-Twenties I Remember (New York: E. P. Dutton and Company, Inc., 1957), p. 154.

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[22]Mumford, "Contemporary Disillusion: A Dialogue," Nation, XIX (December 10, 1924), 636.

[23]Mumford, "The Adolescence of Reform," Freeman, II (December 1, 1920), 272-3.

[24]Mumford, Works and Days, p. 367; Mumford, "Adolescence."

[25]Mumford, "Reflections," pp. 42-46; Mumford-Patrick Geddes, July 6, 1923, Patrick Geddes Collection, National Library of

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[26]LM-Geddes, July 6, 1923.

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[30]LM-Geddes, July 31, 1921, Geddes Mss.; Mumford, Story, pp. 279, 281.

[31]Mumford, Story, pp. 294-7.

[32]Ibid., pp. 290, 302-3.

[33]Mumford, Architecture: Reading with a Purpose, No. 23 (Chicago: American Library Association, 1976), pp. 9, 25.; Mumford, "The Modern City," in Forms and Functions of Twentieth Century Architecture, Vol. IV: Building Types. Edited by Talbot Hamlin. (New York: Columbia University Press, 1952), p. 802.

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[38]Mumford-Frederic J. Osborn, October 17, 1963, Frederic J. Osborn Collection Welwyn Garden City, England.

[39]Caesar Finn-Mumford, September 21, 1947, LM Mss.

[40]Mumford to Dorothy Cecilia Loch, December 8, 1925, LM Mss.

[41]Mumford, Golden Day, pp. 1-3.

[42]Ibid., p. 7.

[43]Ibid., p. 140.

[44]Mumford, "The Ordeal of Mark Twain," Saturday Review of Literature, IX (May 6, 1933), 473-75.

[45]Mumford, Sticks and Stones, pp. 1-2, 6-10; Mumford, "The

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[74]Mumford, Herman Melville, pp. 225-76.

[75]Ibid., pp. 60-61.

[76]Ibid., p. 275.

[77]Mumford, Works and Days, p. 301.

[78]LM-Sophia Mumford, September 10, 1920, LM Mss.

[79]Mumford-Murray, September 9, 1973, Henry Murray Mss., Cambridge, Mass.

[80]Mumford, Works and Days, p. 301.

[81]Mumford, Pesonalia note, July 1929-January 1931, LM Mss.

[82]LM-Bauer, July 25, 1931, LM Mss., Confidential file.

[83]Mumford, Works and Days, pp. 302-3.

[84]Quoted in Kaplan, Whitman, p. 186.

[85]Mumford, Works and Days, pp. 298-99.

[86]LM-Bauer, July 1930, LM Mss.

[87]Ibid.

[88]Mumford, Works and Days, p. 299.

[89]Mumford, Herman Melville, p. 279.

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TECHNOLOGY AND TRADITIONAL CULTURE INSTITUTIONS

Paul T. Durbin

The principal issue I deal with in this essay is: What can or should we do in a democratic society to control technology? By "controlling technology," I mean limiting the bad effects of applied science and technological development and, wherever and to whatever extent possible, directing science and technology toward socially beneficial goals. Under the heading of "bad effects," I would include such things as toxic wastes and environmental pollution but also worker alienation and economic and political inequities associated with the rise of modern high-technology corporations. I have no good general definition of "technology," but the way I use the term, it is roughly equivalent to what others call research and development or R&D; i.e., it refers to that set of activities within larger institutions (the military, government generally, health care, education) which is expected to contribute to the common good in modern societies.

I assume that there are a number of standard answers to the question of controlling technology and that they are all well known. First, some extreme examples:

--Jacques Ellul says there is nothing we can do to control technology, politically or otherwise; Technique has a tendency to dominate everything, and at the present time in the West the "technological system" has very nearly actualized this potential to the fullest extent.

--Martin Heidegger, if I read him correctly, maintains that our instrumentalist, means-worshipping age is the logical culmination of Western metaphysical rationality; though technology could possibly be a path to the revelation of true Being, it much more nearly resembles, in reality, an idolizing of beings (emphasis on the plural), a cultivation of means for their own sake without concern for ends.

--Herbert Marcuse simply condemns our "advanced industrial" society as "one-dimensional," as media-dominated fetishism of technological rationality, with no one in the society any longer capable of the radical imagination that could bring about liberation.

--Langdon Winner, combining all these views with those of Paul Goodman, argues explicitly and in detail that Marxist, liberal, and conservative politics all fail to control technology; for example: "The Marxist faith in the beneficence of unlimited technological development is betrayed ....To the horror of its partisans, it is forced slavishly to obey imperatives left by a system supposedly killed and buried" (Autonomous Technology, 1977, pp. 276-77).

Among those who believe that politics can still control technology:

--Marxists (e.g., Bernard Gendron, in Technology and the Human Condition, 1977), calling the out-of-control claim "dystopian," say the way to take full advantage of technology's promise is to overthrow the spurious democracy of capitalism and introduce a genuine workers' democracy.

--At the opposite extreme of the political spectrum, some

(especially religious) conservatives have simply adopted the views of Ellul or Heidegger. Other conservatives (e.g., Russell Kirk and E. Digby Baltzell), accepting some of the extreme claims, locate current ills in planned economies or in social engineering especially by bureaucrats lacking in the wisdom supplied by tradition. However, probably the dominant conservative view on technology today is that it should be embraced fully and should be pursued without any government regulation (cf. the views, for instance, of William Simon or the Mobil Corporation's ad writers).

--Moderates such as Samuel Florman are more open to government regulation, urging engineering professional societies to be active in the regulatory process in order to control technological side effects. Philosopher Edward Walter (in The Immorality of Limiting Growth, 1981) is as pro-technology as any optimistic conservative in his challenge of "limits to growth" pessimists, but he also condemns laissez-faire conservatism. It is the excessive individualism of Walter's liberalism that I object to.

Turning, then, to my own view, what I take comfort from, as a democratic vehicle for the solution of technological problems--piecemeal, one at a time, in a fits-and-starts ongoing reform process--are the activities of public interest groups addressing a wide variety of social and cultural ills associated with contemporary high-technology society. Langdon Winner makes light of this approach. In response to technological powerlessness, he says,

> One can assume the role of a firefighter, select one or more of the areas of life in which technological change looms as a problem, and set one's goals to improve things in that sphere. ...A new breed of public-interest scientists, engineers, lawyers, and white-color activists now pursues this demanding vocation. One can only wish them well.
>
> But a therapy that treats only the symptoms leaves the roots of the problem untouched (Autonomous Technology, p. 107).

For my part, I would be satisfied to have the major technology-related social and cultural problems solved, even if the remaining roots could be expected to generate new problems for future reformers to deal with. I also believe, with John W. Gardner, founder of Common Cause, that there is a new "constituency for the public interest" that can be trusted to deal with some of the major problems symptomatic of a technologically sick society.

Objections to this optimism abound, not even counting Winner's explicit pessimism. Indeed, every one of the views on technology and politics listed here could be counted on to generate an argument that progressive, public-interest liberal activism either cannot or will not do anything to control the abuses or excesses of technological development.

However, for me, the most significant counterargument comes from within the liberal camp itself. Daniel Bell has made a name for himself as the sociologist of the post-industrial society, in which knowledge elites in the techno-economic sphere exercise the real power in the modern world. Meanwhile, for him, culture is in a shambles of anarchistic, hedonistic individualism, and though he still espouses liberalism in politics--and castigates those

who "simplistically" label him neoconservative--he nowhere seems to say that liberal politics can tame the high-technology corporations. (See Bell's The Coming of Post-Industrial Society, 1973, and especially The Cultural Contradictions of Capitalism, 1976 and 1978). John Kenneth Galbraith is even stronger in his views on the power of the "planning economy" or the "techno-structure" (The New Industrial State, 1967)--though he is willing to argue that a revived political activism might still be able to control the planning economy (i.e., the large, especially high-tech corporations) in its (their) "symbiotic" relationship to (read: control of) the federal bureaucracy and key congressional committees (see Economics and the Public Purpose, 1973). Edward Walter--though he too would like to see effective government regulation of the economy, especially for the benefit of the have-not classes that remain in Western developed countries--bases his hopes on the (to me) weak reed of "selfish interests" rather than on any public interest activism. In short, a number of self-avowed liberal spokespersons are pessimistic (or at least not optimistic) about contemporary culture--or else they base their hopes for change on self-interestedness rather than on the public interest.

ARGUMENTS THAT PUBLIC INTEREST LIBERALISM CAN SOLVE SOCIAL AND CULTURAL PROBLEMS OF TECHNOLOGICAL SOCIETY

A Political Argument:

In a more extensive, book-length study, on which this essay is based, I list a variety of social and cultural ills that have been alleged to afflict modern society: an increasing economic

gap between rich and poor (between rich and poor classes in developed countries and between rich and poor nations), risks to workers in high-tech workplaces, lack of meaningful work or an increasing movement of the workforce into lower-paying service occupations, vexing problems of children and families in today's world, and the anomie associated with suburbanization and the compartmentalization of contemporary life; high-tech threats to the environment, including industrial growth that may adversely affect wilderness areas, endangered species, precious natural resources--indeed the total ecosphere--and including especially the ultimate threat of thermonuclear war; political problems of (felt) helplessness in the face of bureaucracy and of lack of accountability of that part of government that is outside traditional electoral politics; claims (e.g., by Daniel Bell and conservative critics) that culture in high-technology societies is increasingly anarchistic, nihilistic, and hedonistic, as well as worries that our fragmented, departmentalized, compartmentalized, and specialized higher education system is being turned into a career-training program for corporations, to the detriment of the traditional arts and humanities and education for breadth and wisdom.

What my political argument here amounts to is a kind of rebuttal to Langdon Winner's claim that public-interest activism "treats only the symptoms" (of our technological malaise) and "leaves the roots of the problem untouched." In another sense, mine is a sort of neo-Aristotelian or neo-Hippocratic political argument: surely if all the symptoms of the disease in the body

politic are cured, the "root" of the problem will be taken care of at the same time.

My claim: In almost every single instance, with respect to the problems listed, there is one (or more) public interest activist group, well organized and working diligently to solve the problem. Some people worry that contemporary politics (especially in the U.S.) is about to be paralyzed by the clash of single-issue activist groups--many of them now organized into PACs and exerting enormous pressure on elections and on legislatures at all levels. I worry about this too, but I am convinced that public interest activism is addressing this very problem, as well as almost all the other issues mentioned. (The one exception to my optimism has to do with the weakness of the public interest groups in challenging corporate power in the economic sector. Perhaps if enough of the problem-oriented groups in other areas would band together in a progressive political movement--similar to the turn-of-the-century anti-monopoly movement--something could be done to lessen economic inequities, but I am not really optimistic.)

Does the evidence of these groups and their partial successes count for very much against opposing arguments? The last item is a major concession on my part. Winner or Ellul or the Marxists, for instance, could say that I am willing to accept solutions to all but the most important problem. For that reason, I consider this first argument the weakest. There is the possibility of a political counter to technological development, but at this point it is unclear whether public interest activism can prevail.

A Sociological Argument:

Among the authors mentioned here, I find the most persuasive to be John Kenneth Galbraith in his depiction of the power of the "planning economy" in collusion with the federal bureaucracy and congressional committees. That is, I find persuasive the idea of "the new industrial state." (Bell's "post-industrialism" seems to me to be a less convincing reworking of this account, though I will return to Bell in a moment.) My confidence in this picture is bolstered by the support it is given, for instance, by Alfred D. Chandler's The Visible Hand: The Managerial Revolution in American Business (1977). (I could also find support in David Noble's America by Design, 1977, but my counterargument against Galbraith, the left-learning liberal, and Chandler, who seems best labeled a "moderate," if not something more conversative, would hold to an even greater extent against Noble's Marxism. Even so, I think it is fair to say that Noble's own evidence works against him.)

Galbraith's thesis is that the modern economy in no way matches the "classical" or even a Keynesian model--that in a post-Keynesian economy, society is dominated by the "planning economy" or the "technostructure." Even more clearly than in The New Industrial State (1967), Galbraith spells out in Economics and the Public Purpose (1973) how this planning economy or technostructure reaches out into every area of modern life--but especially into government--to see its will done. According to Galbraith, it must do so. The modern, high-technology corporation needs to plan at least ten years into the future (at

any given time), and this is not possible without control of the most significant factors--capital, resources, labor, a good environment for business--that affect profitability of a "market share." This leads to massive lobbying efforts, support for candidates for elected office, cozy relationships both with legislators and with bureaucrats, a revolving door of personnel from industry to government and back (sometimes with stopovers along the way in academia, the faithful servant of government and industry), and--to be frank--it leads to various bribes and other close-to-the-line behaviors to assure that the will of the corporation is done. In Galbraith's account, it also leads to massive intrusion of the corporations into people's lives in all sorts of deleterious ways: pollution, planned unemployment, automation whether or not it is good for workers--the list goes on and on. All this is familiar--it is the modern "mixed economy" of "welfare-state capitalism"--and Galbraith has simply drawn out the political-economic consequences. More than most commentators on the status quo, Galbraith is also aware of latent diversity in a society dominated by the large corporations: he recognizes a continuing market economy at the level of small, local business, perhaps most of all in the illegal and marginal "shadow economy," and he believes there are counterforces that might be tapped, in consumer movements, women's movements, cultural movements (though he thinks these need government subsidies, along with health care, pollution control, and mass transit).

Daniel Bell, in The Coming of Post-Industrial Society (1973) and especially in The Cultural Contradictions of Capitalism (1976

and 1978), while following Galbraith's lead has attempted to devise a framework of analysis for what is going on. In opposition to "end-of-an-era" conservatives, on one side, and to Marxists, on the other, Bell proposes a "pluralist" model, involving separate "axial structures": the polity, the techno-economic sphere (largely dominant today in high-technology countries), and the cultural sphere. Bell's views are generally well known, although he does complain that critics have misconstrued his "post-industrialism" which applies primarily in the techno-economic realm. The Cultural Contradictions of Capitalism is an elaborate indictment of twentieth-century culture as an anarchical, hedonistic dead end in "contradiction" with the needs of today's high-technology economy and the political reforms needed to accommodate it.

As a social science account of contemporary society, I find the Galbraith-Bell model (shared by many other authors) persuasive, but I also find it lacking in one significant way. Bell's three-part model is useful to show what I have in mind. I think the evidence we have shows that he is much too simplistic in his account of contemporary culture. He leans almost exclusively on the trendsetting avant-garde, largely ignoring the diversity that has always existed even there and totally ignoring the even greater diversity that has always existed among non-trendsetting writers, painters, musicians, and artists generally. If we go beyond this sphere of culture narrowly defined, to cultural institutions in a broader sense, the pluralistic picture gets even more pluralistic. (I should note in passing that any

criticism of Bell along these lines is even more telling against a Marxist scheme that interprets everything, culture included, in terms of a two-class conflict--and also against the cultural conservatives with whom Bell is today so often lumped.) Under "cultural institutions in the broader sense," I would include all those institutions people take to be guardians of traditional cultural values: the family; religion; the schools; higher education, especially in the arts and humanities; some aspects of the media; theoretical jurisprudence; and leisure pursuits of many sorts.

In George Orwell's 1984, all these aspects of traditional culture are gone, or relegated to politically meaningless status among the proles. Similarly, many other negative social commentators on the contemporary scene find various of these traditional institutions fatally ill under the onslaughts of technology and the bureaucratic state: think of laments over the "bourgeois family," the sad state of institutional religion, or the mindless pap served up to the masses by the media. I do not by any means deny that there are exceedingly serious maladies affecting many of these institutions, but I do think a dose of common sense is called for. Religious institutions receive enormous amounts of public support, most easily measured in terms of money. While much of contemporary law is technologized and bureaucratized, nonetheless far-seeing jurists still write wise decisions--and somehow get the training to do so. The humanities may be suffering, but (pace William Bennett) much good work is still done in art, history, philosophy, and humanistic social science departments. And so on.

The problem with many social analyses of contemporary society, in short, is that they look at the scene with blinders on. Seeing admittedly great social and political ills, they do not recognize the potential for restoration that still exists within certain segments of contemporary society.

A Historical Argument:

My claim is that there is wisdom in the history of the American experience. As a lead into this argument, I would cite Garry Wills's contention, in Inventing America: Jefferson's Declaration of Independence (1978), that the American democratic political system is a unique embodiment of a profound philosophical view--though one that is commonsensical rather than academic. Arguing against the standard Lockean interpretation, Wills traces Jefferson's ideas back through his teachers to the thinkers of the Scottish Enlightenment, especially Francis Hutcheson and David Hume. (In a later book, Wills does the same sort of exegesis on the Federalist Papers of James Madison and Alexander Hamilton, with more emphasis on Hume than on Hutcheson.) Wills sees Jefferson as vexed about one fundamental problem: how people are motivated to do good, to be civically responsible, to rise above selfish interests, if such behavior cannot be explained on the basis of divine guidance, individual conscience, or appeals to reason. Like Hutcheson and Hume (surprisingly?) Jefferson appeals to "moral sentiment," to a common "moral sense" or delight in benevolence. According to Wills, this is what Jefferson was referring to when he had the Declaration of Independence proclaim that, "All men are created equal."

As the test case of his theory, Wills details Jefferson's ambivalent stance on Negro slaves. Here Jefferson took it to be obvious (and Wills shows how Jefferson shared this prejudice with the most enlightened thinkers of the age, the French philosophes) that blacks are not equal to whites in intelligence, in their capabilities (except for music), in owning and making productive use of property. Yet, Jefferson says, blacks are equal to whites in "benevolence, gratitude, and unshaken fidelity." Wills concludes: "Thus Jefferson is recognizing in slaves, so often accused of compulsive lying [and other anti-social vices], a basis for trust that lies behind all social compacts based on the moral sense."

That there is a universal moral sense equally shared by all--no matter their differences in natural or inherited endowments--which is the basis of shared social life, does not mean that no one ever acts in a non-benevolent way, that no one is ever selfish or greedy or ever violates social norms or legal prohibitions. It is even the case, Wills reports Jefferson as saying (echoing Hutcheson and Hume), that corrupt institutions can dim the brightness of the moral sense or dampen the intensity of moral sentiment. Hence the importance of establishing democratic institutions, including (fair) courts of justice, schools, a free press. Hence also the legitimacy of rebellion against a political system in which the legitimate exercise of self-rule according to the moral sense is not given free play.

It is worth noting two things at this point about the moral sense theory. The view does have a kind of commonsense

universality about it. Though the thinkers of the Scottish Enlightenment were as critical as any Enlightenment thinkers of medieval scholastic metaphysics, there is a close parallel between the moral sentiments and the natural-law moralists' basic "principles spontaneously recognized by all humans capable of the use of reason." On the other hand--and this is the second point--the view can seem to be "scientifically" naive, to be based on fallible commonsense or indefensibly "metaphysical" views of the universality of human nature. I do not respond to that objection here.

To summarize (and ignore the difficulties), Wills is having Jefferson (and Hume too) take one side in the altruism debate--the altruist side. And that is also the side I am taking. I think the preferable strain in liberal democratic theory is the one that emphasizes egalitarianism in something like the "moral sentiment" sense.

Another strain in the history of American political philosophy that suffers from a similar ambivalence of interpretation--and where, also, I think the preference should fall on the altruistic side--is American Pragmatism. John Dewey is often presented as a reinterpreter of nineteenth-century utilitarianism (especially that of John Stuart Mill), and as a defender of individual rights, even of individualism. Yet Dewey, in his social and political philosophy as well as in his popular liberal writings, is adamant that individual effort must contribute to the good of society. Indeed, how individual effort (of the right kind) contributes to the "social growth of democracy" is a problem Dewey wrestles with in all his social and

political writings. This same conflict and the same resolution are to be found in all the American Pragmatists--perhaps least in C. S. Peirce and most in William James and G. H. Mead.

I want to add two final notes to this argument. (1) Wills is wrong, I think, to use his discoveries about Jefferson's sources (if subsequent schlolarship affirms they are genuine discoveries) to bolster his conservative strict constructionism. Discovering non-Lockean sources of America's founding documents should be just the first step. Surely there were other important sources, as there were a very large number of conflicting viewpoints at the time of the Revolution and the writing of the Constitution. In addition to Jefferson's "Scottish philosophy," there surely was Lockeanism, as there were particular viewpoints (and sources) of Alexander Hamilton, James Madison, John Adams--even of would-be Jacksonian democrats before their time. Indeed, one point of Jefferson's "moral sentiments" base of political community--and presumably one reason for its acceptance by the framers of the Declaration of Independence once Jefferson had phrased it that way--was its recognition of the legitimacy of pluralist disagreement amid common consensus.

(2) Similarly, the American Pragmatists celebrated diversity of viewpoints alongside the search for a growth-enhancing consensus. William James can speak for them all:

> In seeking for a universal principle [of goodness] we inevitably are carried onward to the most universal principle,--that the essence of good is simply to satisfy demand...[But] (since all demands conjointly cannot be satisfied in this poor world) . . . must not the guiding principle for [a practical] ethical philosophy . . . be simply to

> satisfy at all times as many demands as we can? That act must be the best act, accordingly, which makes for the best whole, in the sense of awakening the least sum of dissatisfactions ("The Moral Philosopher and the Moral Life").

What this historical argument amounts to is a rationalization, based on long history in the American experience, of ACLU-type toleration of diversity of opinions: a recognition that, whatever the pressures toward orthodoxy from Puritanism to Marcuse's "one-dimensional" technological society, there have always, in America, been advocates of dissent and non-conformism, resisters against the would-be tyranny of the majority. Public interest activists, whether in the past or in the present, have always drawn and do now draw upon this tradition.

A Philosophy/Social Ethics Argument:

My text for this section comes from Tom Beauchamp. At the end of his treatment of basic theories in Philosophical Ethics (1982), he concludes:

> Three broad-ranging approaches to morality have been discussed [here]: utilitarian theories, deontological theories, and virtue theories. It is not entirely clear that one must accept only one of these approaches while rejecting the others. It is possible to conceive each general theory as developed from a different conception of the moral life, a conception which only partially captures the diversity of that life. The discussion of Aristotle in this chapter, for example, noted how his theory emphasizes statesmanship and the education of citizens in the state. He conceives ethics in terms of the way to promote the best form of life that is possible in a community, and his ethics is patterned with this objective in mind. Kant, by contrast, sees morality as springing from reason as issuing categorical demands to individuals. ...Mill and Bentham, on the other hand, came to morality from concerns about social welfare and social reform (p. 179).

Later on, Beauchamp adds still a fourth perspective, when he contrasts Marx's conception of justice with the recent views of John Rawls and Robert Nozick.

I think something profound is going on here, and I use Beauchamp's insight as the basis of my final argument in favor of a public-interest liberal activism as the best approach to solving problems associated with technological society. The main point, for me, is that in ethics and political philosophy there is a great deal more diversity than is usually entertained in contemporary discussions of ethical and political theory (the latter from a philosophical perspective)--more, that is, than is customarily suggested by lumping all theories under the headings of utilitarianism or deontologism (or consequence morality versus non-consequentialist or absolutist theories). And, more particularly, I think a neo-Aristotelian virtue ethic, emphasizing the political community as primary--and individual virtue only insofar as it contributes to political community--is an important perspective often missing in contemporary debates in meta-ethics (as is the Marxist better-than-justice perspective, as detailed for instance by Allen Buchanan in Marx and Justice, 1982). I no longer consider myself an Aristotelian, but I think fruitful insights from that perspective can be combined with Pragmatism (as suggested, long ago, by J. H. Randall, in his Aristotle, 1960).

My problem with Rawls can be suggested by way of a short quote from A Theory of Justice (1971): "It is impossible to assume that the parties [to the social contract] are simply perfect altruists. They must have some separate interests which

may conflict. Justice as fairness makes this assumption, in the form of mutual disinterest, the main motivational condition of the original position" (p. 190).

At the other end of the allegedly liberal spectrum--the Locke-Nozick libertarian end--individualism is even more pronounced. Here I quote, not from Nozick, but from Edward Walter, who (in The Immorality of Limiting Growth, 1981) has applied the Lockean perspective to problems of technological society:

> The fundamental beliefs about human nature that are vital to liberal philosophy are that (1) people are fundamentally self-interested, (2) self-interest points toward happiness, and (3) people, because of biological and social variability, are temperamentally diverse and consequently seek happiness in different ways. ...Two necessary means of achieving self-development are thought to be [4] freedom, so that people can pursue their individual paths, and [5] material well-being (p. 61).

I do not believe that people are necessarily self-interested (at least they are not always so), and I believe there is more to ethics in a political context than Rawls's "mutual disinterest." So for me both utilitarianism and Kant-based deontological contract theories are fundamentally flawed.

I believe, further, that a virtue ethic aimed at the common good need not be identified too narrowly with Aristotelianism. The Scottish Enlightenment philosophy that Garry Wills argues lies at the base of the Declaration of Independence and of the American Constitution is at least one other virtue ethic. And I think many more such systems could be developed, all preferable to either utilitarianism or contemporary anti-utilitarian theories (e.g., Rawls)--and all much more open to a belief in

human altruism and social conscience. (I will here simply assume that such a theory or theories could withstand the standard objections to Aristotelianism and the Scottish philosophy of "moral sentiments"--as well as stand up to objections from utilitarians and Rawlsians.)

Now to apply this to problems of a technological society--and draw this whole essay to a conclusion.

Beauchamp lists social reform as the primary motivation of Benthamite utilitarians. I think it was also the motivation of an entirely different sort of "social ethicists": reformers of an earlier generation (I am thinking mostly of developments in the U.S.) who appealed to the "social gospel" or to the social encyclicals of Roman Catholic popes. Such people were religious in their orientation where I do not think of myself that way--and in any case I think that sort of "social ethics" can be, if necessary, secularized.

An altruistic social ethic applied to problems of contemporary technology, it seems to me, could do two things. It could provide the motivation and many of the tools for expanding codes of ethics of technical professional societies. As they stand, these codes rarely extend to broad social responsibilities. They are thoroughly compatible with a self-interested utilitarianism or with individualistic duty theory. To bring in broader social responsibilities, it seems to me an injection of social ethics (in the sense referred to) would help far more than would any tinkering with utilitarianism or current social contract theories.

Second, an altruism-based social ethic of this sort would add a rationalization and support for socially conscientious public-interest activism--whether on the part of scientist and engineer public interest activist groups or on the part of non-scientists willing to work with the former on the solution of technology-related problems.

CONCLUSION

In my opinion, an altruistic social ethic links up with the best in the American historical experience--a tradition still surprisingly vital in certain segments of contemporary society, whether or not the activists are consciously aware of their roots. The segments I have principally in mind are to be found mostly in the cultural institutions, broadly construed, that I talked about at the outset.

An altruistic social ethic of the sort I have in mind provides the implicit rationalization for public interest activism--a rationalization which (again in my opinion) cannot be supplied by self-interest libertarianism or by an egalitarian contract theory based on the notion of mutual disinterest.

Finally, such a social ethic provides some hope of responding to the doomsayers--whether Marxists saying that technological problems cannot be solved until capitalism is replaced by a genuine workers' democracy, or Ellulians and Heideggerians pessimistically proclaiming that nothing at all can be done to control technology.

One last word: only an altruistic, social-ethic liberalism can do the job, and even then it is only a hope. The task of reform is never-ending, and there are likely to be setbacks all along the way.

NOTE

In the session at which this paper was presented, two objections were raised. Carl Mitcham accused me of holding a partisan view of Jacques Ellul and Langdon Winner that is wrong for two reasons: neither of them is as pessimistic about technology as I say, and in any event both ought to be respected for the insights they contribute to debates over technology studies. Steve Goldman, asking himself what analogy he might use to grasp what I am getting at, accused me of proposing a "syncretistic medicine" when what we need is to discover the "underlying logic" (did he mean the etiology?) of contemporary techno-social ills. In his official version, Goldman has dropped the play on my medico-social analogy; instead, he limits himself to contrasting my "essential multiplicity of contemporary technology-related social problems" with his contention that the problems have an "essential coherence": all of them are related to the "parochial" interests of technological managers, corporate or political.

Mitcham's accusation I simply do not understand. What I argue for is an ACLU-type democratic tolerance of different opinions. The only qualification I would put on that is that I am only interested in the common good aspects of such opinions (or group activities supporting them). I do not deny that such

groups will also have partisan views--but those belong to the individuals and groups involved, not to me. Perhaps the tone of my defense of a social-ethics-based liberalism is what put Mitcham off. In any case, I agree with Mitcham that Ellul and Winner have contributed to the technology debate, and I am open-minded with respect to their opinion, even when they are intolerant of other views (including my own).

Goldman, even in his revised version, seems to misunderstand my position as much as he opposes it. With him, I would agree that many technosocial problems are the result of parochial interests; indeed, the public interest activists I champion usually contrast their public interests with special interests. Where Goldman and I seem to disagree is over the question of whether one must (intellectually?) get at the common root of problems before acting. He even seems to think it is (at least partly) up to philosophers to discern this common root. I believe, with activist liberal philosophers such as John Dewey and G. H. Mead, that the commonsense distinction between public and special interests is all the "deep" philosophizing we need. What is called for instead of further intellectualizing is to get to work at intelligent social problem solving that will increase the amount of the former and decrease the latter. To do this effectively, it seems to me, we need more social activism rather than more theorizing--though I admit that intelligent activism should enlist philosophers and other intellectuals alongside more down-to-earth types.

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LANGDON WINNER ON JACQUES ELLUL: AN INTRODUCTION TO ALTERNATIVE POLITICAL CRITIQUES OF TECHNOLOGY

Carl Mitcham

Primarily on the basis of his book The Technological Society (1964), Jacques Ellul has the reputation of an uncompromising anti-technologist. His critique is commonly summarized as a socio-political analysis of how modern technology inevitably takes on an independence that undermines human freedom. Langdon Winner, in his Autonomous Technology: Technics-Out-of-Control as a Theme in Political Thought (1977),[1] deliberately sets out to explore and defend an argument he finds suggested by Ellul and others concerning the creation of what he calls "technological politics." On such grounds it seems reasonable to group these two writers together, and to attempt an exploration of their arguments and ideas.

Any political critique ultimately rests not just on an analysis of technology but equally on an intepretation of the nature of politics. My thesis, simply stated, is that Winner and Ellul understand politics in decidedly different ways. For want of a better summary of this difference, I suggest that Winner interprets politics through the eyes of art, Ellul through the eyes of religion. Each judges modern technology to have reduced or overwhelmed in the political realm certain fundamental concerns--those of aesthetics and of religion, respectively. Neither, it may be noted, considers the classic or traditional concern for individual virtue and distributive justice.

Despite the fact that Ellul is the elder man and Winner is sometimes thought to be his disciple, I shall begin to develop my thesis by considering Winner's position in some detail. This is because Winner is somewhat more accessible, makes a more measured and pointed case with regard to specifics, and is in fact a good entrée into Ellul--although I also think that ultimately Ellul's position is more profound.

For now, though, let me examine Winner's Autonomous Technoloy. This is a book by a young scholar (it was published when Winner was 33) who was born in San Luis Obispo, California, in 1944. In 1962 Winner "went up" to the University of California at Berkeley, where he majored in political science, earning a BA in 1966, MA in 1967, and PhD in 1973 at age 29. His dissertation, entitled Autonomous Technology and Political Thought, constitutes a draft of his first book. In fact, his book retains some of the flavor of a dissertation, and Winner himself refers to it on another occasion as "long" and "dense."[2]

The background of Berkeley in the 1960s immediately reminds us that Winner came of age during a time of peculiar ferment in American academic life. In his Preface, Winner recalls that the theme of autonomous technology "was first and most powerfully raised for me by a speaker [Mario Savio] on the steps of Sproul Hall in December 1964" (p.x). But his personal reaction to U.C. President Clark Kerr's vision of a multiversity "wedding of higher education to the insistent needs of the corporation and bureaucracies in a technological order" was, he says in a later essay--one which has become the title piece of his second book, The Whale and the Reactor: A Search for Limits in Age of High

Technology (1985)--dependent on his childhood experience of witnessing the rapid transformation of rural America.

> My home town [Winner writes] is situated almost exactly half way between two large urban centers, San Francisco and Los Angeles.... During the decade and a half that followed World War II the bucolic environment of San Luis Obispo county was again and again shaken by technological and social transformations that seemed to emanate from one city or the other or both. In a few short years we witnessed the coming of the freeways, supermarkets, jet airplanes, television, guided missiles (which I could watch from my front door as the were shot from Vandenburg Air Force base), computers, pre-fabricated houses in large tracts, wonder drugs, food additives, plastics and any number of other innovations. The shape of the home and the activities of the family were renovated to accomodate the arrival of all kinds of electronic gadgets. My parents still tell the story of buying a television set in 1953 in order to lure their two children back home, since my brother and I had gone off to watch Buck Rogers and the Cisco Kid on the TV across the street. I have vivid memories of the day I was playing in the huge field in back of our house and was surprised to see a bulldozer begin pushing its way up the hill, the first piece of earth-moving equipment that eventually carved a four-lane freeway through the center of town. It was, in the most literal sense, the machine in the garden.[3]

Winner is a member of the 1960s or "new left" generation--a generation of students who came to doubt and question received political and cultural assumptions, who argued the failure of their parents' ideals in both the political and cultural realms.

The new politics of the 1960s was, as just suggested, complemented by a new culture, the most important expressions of which were rock music and avant-garde cinema. Here again Winner has been, if anything, even more involved. In 1969, as a graduate student at Berkeley, he not only published his first scholarly

article on political theory,[4] he also began writing music criticism--first for Rolling Stone magazine, and since for a variety of publications from the Village Voice to Atlantic Monthly. Winner also plays piano, and in this same year cut an album called The Masked Marauders. When, in the Preface to Autonomous Technology, Winner acknowledges the influence of Don Van Vliet--better known as Captain Beefheart of "Captain Beefheart and the Magic Band"--and "his sense of the comedy of nature and artifice," this should be taken seriously. Indeed, one of Winner's works in progress is a biographical study of Van Vliet, who went to high school with the legendary Frank Zappa, and is now actually as much a painter as he is a musician.[5] Finally, Winner has been involved as well with the technological art of movie making by contributing to the film Koyaanisquatsi (a Hopi word meaning "life out of bounds").

So the background of Autonomous Technology is two-fold: political and cultural--the political being an experience of disenfranchisement from technological power; the cultural being to some extent, perhaps, an experience of technological enfrancisement. Rock music and avant-garde cinema are clearly dependent on modern technology, but in a different way and to different ends than contemporay politics. Technology functions in both much more as a means to something extra- or trans-technological.

Against this bi-polar background, then, let me return to Autonomous Technology. Winner's book, like many other things, can conveniently be divided into three parts--a beginning, a middle, and an end. The beginning consists of half the book--four out of

eight chapters--and attempts to justify the subject while excluding certain approaches to it. This part is the most heavily laced with quotations and footnotes. In the Introduction, Winner adopts and defends Ellul's definition of technology as "the totality of methods rationally arrived at and [oriented toward] efficiency" (p.9). Technology is thus "a vast, diverse, ubiquitous totality that stands at the center of modern culture" (ibid). Admitting the difficulty of specifying some univocal element in this totality, Winner appeals to Ludwig Wittgenstein's discussion of "family resemblances" and "language games." In a later essay--which has become the lead essay in The Whale and the Reactor--he adapts Wittgenstein again, and calls technology, like language, a "form of life."[6] Subsequently he refers, as well, to Karl Marx's idea of a form of production as "a definite mode of life."[7]

Such an approach easily calls into question traditional common sense assumptions regarding human autonomy and the mastery of technology. It would seem strange, for instance, to speak of human beings as autonomous with respect to language; the "mastery of a language" indicates becoming more fully adapted to, rather than just taking control of, a particular "form of life." In chapter one Winner pursues a questioning of the human-technology relationship by pointing out the conflict between a conception of the human as autonomous and technology as autonomous, and distinguishing three senses of technological autonomy:

- o technological change as autonomous,
- o the operation of large-scale technical systems as autonomous, and
- o the personal feeling of being "dwarfed by . . . complex [technological] apparatus" (p.17).

These senses of technological autonomy will figure prominently as the primary themes of each part of Autonomous Technology--although the third is, of course, just an experiential form of the first two.

Rather than trying to argue for or in defense of such conceptions, Winner proposes to assume their inherent (if partial) truth, and see if they cannot better explain certain aspects of the modern encounter with technology. On this basis Winner sketches the inadequacy of previous philosophical discussions of the mastery of things made, and turns to literature--Frankenstein, Erewhon, Hawthorne, Poe, Vonnegut, and E. M. Forster--to document an alternative conception of mastery by things made. When he finally gets to Ellul, by way of Marx, he refers to The Technological Society as "a fascinating, sprawling masterwork" that "makes themes long recognized in fiction, poetry, film, and the plastic arts accessible to contemporary sociology and political theory" (p.41).

Chapter two, which deals at length with technological change as autonomous, is twice as long as any other of the first four chapters and is, if you will, the core of the first part of the book. In it Winner begins by noting the paradox that even liberal theories of modern technological change attribute to it a certain inevitability. On this point "optimists" and "pessimists"

ironically agree. They agree as well about the need to acknowledge both a certain inevitability in technological change, and to recognize the reality of human freedom; both are equally real. But since the latter has been explored for centuries, what Winner wants to do is figure out how intelligently to describe the former.

The autonomy of technological change has two aspects: one, an internal autonomy born of the necessary evolutionary sequence in technical forms; two, an external autonomy concerned with the inevitability of certain societal effects. In other words, technological change can be autonomous in the sense that it evolves according to its own internal principles; and/or it can be autonomous as the more determining than determined factor in society--determining, that is, social relationships, culture, etc. In explaining the first point Winner concentrates on articulating Ellul's notion of the self-augmenting character of technological change (pp. 60-73); with regard to the second, he elaborates on Karl Marx (pp. 77-88). He concludes by proposing, as a more adequate formulation of Marx's theory of the primacy of the modes of production, a notion of what he calls "technological drift"--on another occasion he uses the phrase "technological somnambulism"[8]--founded on a rejection of the traditional counsels of caution in all human affairs (pp. 88-100) and by reformulating the idea of a "technological imperative" as no doubt hypothetical but nonetheless well instutionalized in contemporary Western society (pp. 100-106).

There are a number of comments that can be made about

Winner's attempt at this point to explicate the first major sense of technology as autonomous. First, one should note the carefully measured character of his analysis. Although he deftly deflects charges of pessimism by noting they would have to apply to Aeschylus and Shakespeare as well, and while he undercuts piecemeal complaints of inaccuracy by affirming à la Durkheim the independence of "social facts," despite both these caveats, Winner is not denying that individuals exercise choices and thus contribute in some manner to technological change. In fact, at one juncture he refers to the kind of determinism exercised by modern technology on society as a "voluntary determinism" (p. 99, his italics), one that follows from a fundamental choice for or acceptance of technology. At the same time, Winner does want to maintain the reality of the autonomy of technological change.

The truth is--to use an example from my own experience--that although a person can decide whether or not to have a television set, once the decision has been made to get one, then all sorts of consequences seem to follow automatically and to become more and more difficult to resist. There are key junctures in the concatenation of events where a choice one way or another carries with it manifold implications. Or, to put it another way, a person only has a limited amount of will power. This will power may be adequate to keep the TV out of the home altogether, but it is seldom enough to resist the continual daily temptations to watch dumb programs or to give in to kids who want to watch dumb programs. Furthermore, it is almost always easier to keep a technology at arms length than it is to get rid of it once it has been tried. These are simple realities of human willing,

motivation, and habituation which, when engaged with technology, would seem to imply a need for caution or prudence in technological decision making, but which, under the influence of the ideology of technological progress--i.e., the belief that changes are always more beneficial than not--are systematically ignored. The commitment to "technological drift" entails not putting a great deal of effort into trying to anticipate side effects but instead of reacting to unintended consequences.

As a second comment, one should note that the issue of internal versus external influences in the history of technology is paralleled by a debate about the weight of internal versus external factors in the history of science--and that, in the case of science, the received view is that it is internal factors which are primary, that the history of science is indeed autonomous. Moreover, the reason why the autonomy of science is not taken to be in any way an affront to human dignity is because of an undiscussed counter-image to the identification of human nature with freedom of choice. The counter-image is that of free choice not as an end but as a means, as defining a situation to be worked within and through, but as a condition ultimately to be transcended--although this transcendence brings about, as well, its own kind of freedom from the cares and uncertainties of this world. Freedom of choice in mathematics is not good but stupid; it is not something to be preserved but the product of ignorance. Knowledge carries with it a certain necessity. Indeed, there are even historians and philosophers of technology who argue for the autonomy of technological change precisely on

the grounds that this makes it more human in the highest sense.[9] But this turns technology, as it also turns science, into a kind of religion, and thus raises issues which it will be better for the present to defer.

Following the long, core, preliminary argument of chapter two, Winner tacks on appendices considering two approaches to the politics of technology which he wants to reject. One, dealt with in chapter three, concerns "depth analysis" (p. 108) approaches to the historical origins of modern technology.[10] For Winner, the various historical origin theses of Max Weber, Lynn White Jr., John Passmore, Max Horkheimer and Theodore Adorno, Martin Heidegger--even Ellul, on this score--are impractical if not specious searches for "the flaw in Western culture" (p. 130). They are not "helpful in reorienting action in the technological sphere" (p. 108), nor do they make substantive contributions to a political theory which seeks to steer a middle course between "depths without direction and details without meaning" (p. 134).

Chapter four, on technocracy, rejects another approach--the argument that the primacy of technology is explained by the primacy of technologists. The real issue, as he restates at the opening of chapter five, is not "Who governs?" but "What governs?"

> Parallel to the conceptions about scientific and technical elites and their power is a notion of order--of technological order--in which in a true sense no persons or groups rule at all. . . . In this way of looking at things, technology itself is seen to have a distinctly political form (p. 173).

The middle or heart of Winner's book--about one third by volume--consists of chapters five and six which present and

defend what he calls a theory of the technological politics of large-scale sociotechnical systems--or what, in chapter one, was identified as the second form of technological autonomy.

In this central analysis of large-scale sociotechnical systems Winner eschews, again in measured but morally serious tones, the temptation to devise some nifty new mediagenic term such as "culture shock," "postindustrial," or "technetronic"--terms found in the titles of books whose "fashion . . . is to exclaim in apparent horror at the incredible scene unfolding before one's eyes and yet deep in one's heart relish the excitement and perversity of it all" (p. 176). Critics who adopt such an approach are more like advertisements. "Exceptions," he writes, "are to be found in a handful of serious artists and philosophers whose efforts go beyond anecodote and future prattle to penetrate the aesthetic or theoretic essense of the phenomena at hand" (p. 176, my italics). The explicit appeal to art and aesethics here includes footnote references to Captain Beefheart, the Mothers of Invention, and Firesign Theater.

Winner also respectfully distances himself from Ellul at just this point. Ellul's use of the term "technique" Winner finds to be reductionist.

> His work stands as an elaborate hall of mirrors, deliberately designed to leave no passage out. From the building of skyscrapers to roller skating, Ellul's ubiquitous concept of technique expands to encompass any subject and to resist contrary examples. . . . The Technological Society is less an attempt at systematic theory than a wholesale catalog of assertions and illustrations buzzing around a particular point. . . . Fortunately [he adds] we need not follow Ellul in seeing technique as a strictly univocal phenomenon or in making

> totally nonfalsifiable arguments. It is possible to learn from the man's vision without adopting the idiosyncrasies of his work (p. 177).

In his attempt to avoid what he considers Ellul's closed circle of argument and over-heated rhetoric without falling into eclectic compromise or becoming lost in excessive detail, Winner sketches nine key features which define the framework of the technological society. For myself, however, I find Winner's analysis, although more restrained, less informative than Ellul's. Ellul not only limits himself to seven key features in his "characterology of technique," but he follows the initial analysis with extensive descriptions of how these features are manifested in economy (Technological Society, chapter two), state (ibid., chapter three), and the "human resources" of education, culture, medicine, etc. (ibid., chapter four).

Winner, by contrast, moves directly from his own brief but more complicated nine-factor characterology (pp. 178-87) to a philosophical re-statement of the basic thesis (see chapter one) that technological mastery--operating through the indicated framework--has made human beings slaves of their own creations. He then seeks to spell out in detail how technological society is an instantiation in social realtions of a more comprehensive technological order and discipline, and the ways in which this instantiation advances by tranformation and incorporation of the non-technical world. His argument here depends heavily on the prior analysis of technological change, while it picks up and expands on his suggestions regarding the technological imperative. Once again Winner also makes critical appeal to the

analyses of poets and artists--Emerson and Shelly, particularly. But he proceeds primarily by expounding and criticizing the relevant views of a spectrum of political theorists with strong literary affinities--Oswald Spengler, Friedrich Georg Junger, Karl Jaspers, Lewis Mumford, Herbert Marcuse, and Siegfried Giedion, as well as Ellul.

Winner's argument here strikes me as less successful than it might have been. In a later essay entitled "Do Artifacts Have Politics?"--also included in The Whale and the Reactor--Winner restates the basic "technological politics" argument in much more succinct and pointed terms.

> The theory of technological politics draws attention to the momentum of large-scale sociotechnical systems, to the response of modern societies to certain technological imperatives, and to the all too common signs of the adaptation of human ends to technical means. . . . One strength of this point of view is that it takes technical artifacts seriously. Rather than insist that we immediately reduce everything to the interplay of social forces, it suggests that we pay attention to the characteristics of technical objects and the meaning of those characteristics. A necessary complement to, rather than a replacement for, theories of the social determination of technology, this perspective identifies certain technologies as political phenomena in their own right.[11]

Artifacts can have politics--that is, exhibit distinct political characteristics--when, either intentionally or unintentionally, they become substitutes for political decision making in a community. As an example of the former, Winner cites the low bridges built by Robert Moses over Long Island expressways with the direct intention of excluding public buses from the roads and thereby depriving lower economic groups access

to certain public recreation areas. As an instance of the latter, there are the unintentional consequences of the mechanical tomato harvester which has wrought a fundamental transformation in California agriculture. Response to the tomato harvester also illustrates what Winner in Autonomous Technology calls "reverse adaptation," that is the subordination of ends to means. Because of the demands of the harvester, the means, a new and harder species of tomato, the end, had to be developed--never mind that this new tomato was neither as nutritious nor as flavorful as its predecessor.

Recognition of such manifest political implications of artifacts should leads us, Winner suggests, to pay "the same careful attention . . . to such things as the building of highways, the creation of television networks, and the tailoring of seemingly insignificant features of new machines"[12] as we at least nominally accord to the passing of laws. Would anyone want laws, which have no less impact upon our lives, to be made with the same abandon that we grant to technology--in the belief that democracy or public welfare would be served by keeping only those laws which most people obeyed (or bought)?

But beside technical arrangements as consciously or unconsciously chosen forms of political order, there also exists the possibility that some technologies exhibit inherent political tendencies of a general sort. Is it not true that craft technologies are more compatible with decentralization and democracy, and that technologies of power and scale imply authoritarianism? The argument to this effect can be found in thinkers as diverse as Friedrick Engles, Alfred Chandler, and

Lewis Mumford. As summarized by Winner:

> The properties of many modern technologies--oil pipelines and refineries, for example--are such that overwhelmingly impressive economies of scale and speed are possible. If such systems are to work effectively, efficiently, quickly, and safely, certain requirements of internal social organization have to be fulfilled; the material possibilities that modern technologies make available could not be explained otherwise.[13]

It is worth noting that in making his case for the political significance of artifacts as artifacts Winner shifts the stress from where it is in Ellul. For Ellul, technology is rational technique, method, process. For Winner the focus here, at least, is on objects, products. This is a not insignificant difference and reflects, I would again suggest, Winner's aesthetic perspective.

Having dealt at length with technological change as autonomous (chapter two) and with sociotechnical systems as autonomous (chapters five and six), Winner turns in his concluding two chapters to a discussion of the personal experience of such technological autonomy, the problem of moral agency in the face of technical complexity (chapter seven) and the issue of what is to be done (chapter eight). Technical complexity, both manifest by bureaucratic organizational networks (autonomous sociotechnical systems) or concealed in microelectronic circuitry (the issue of autonomous technological change), exceeds the human ability to make sense of things. Ironically enough, this opacity invites the creation of a "myth" of autonomous technology as a kind of religious explanation of what is going on--or, if not, the multiplication of a plethora of

images: postindustrial, technetronic, etc.

The last chapter, entitled "Frankenstein's Problem," is the shortest and most personal in the book. As such it indicates issues which Winner subsequently zeroes in on in individual essays over the next few years. Again Winner returns to literature to summarize the situation he has analyzed, that engendered by the fact that human creations have escaped from the control of the creators. The problem is that, like Dr. Victor Frankenstein, we have only fathered our inventions and in typical macho fashion copped out on mothering them. Just as Dr. Frankenstein runs out on his artificially created child, we run out on our technology and the "things that have been created but not in a context of sufficient care" (p. 313). Modern technology is too much a one-night stand, a fuck and run affair. His view, Winner reiterates, is much like that of Mary Shelley's, that "we are dealing with an unfinished creation, largely forgotten and uncared for, which is forced to make its own way in the world" (p. 316)--that is, to become autonomous. Autonomy is not something technology in itself wants, if you will, it is something we impose upon it.

So the question becomes, how can we take more care with our technology? Winner identifies two current movements in this direction: one being technology assessment (TA) and the expansion of risk-cost-benefit analyses, the other being alternative technology (AT) and attempts to construct different technical environments. He is suspicious of the adequacy of the first. TA recognizes "that technology is problematic in the sense that it

now requires legislation" but lacks the AT awareness "that technology in a true sense is legislation" (p. 323, his italics). Technology assessment has nevertheless become the care of choice of the establishment and, like the bureaucratic welfare system it resembles, subject to numerous studies laying down its methodological principles. Out of his own expressed concern for the alternative technology movement, Winner proposes a kind of AT methodology which he calls "epistemological Luddism." And at this point, I think, Winner blinks.

In a sense, Winner, like the TA people, wants to argue that what we need is not less but more technology. He just defines technology differently--as craft or art, not science. Since "the fundamental business of technics [is] taking things apart and putting them together" he proposes "tackling whatever flaws one sees in the various systems of technology [by] beginning to dismantle those systems . . . not as a solution in itself but as a method of inquiry" (p. 330). This "method of carefully and deliberately dismantling technologies" is distinguished from traditional Luddism by being not so much a quick fix as a means to knowledge--hence the term, epistemological Luddism. It is Luddism not based on the conviction of certainty that some particular machine is the problem, but Luddism seeking to discover the interrelations between technology and human beings by systematically discarding certain technologies and observing the results. So far, so good.

But then, anticipating critics, Winner over-exercises that moderation for which he has been praised.

> I am not proposing [he says] that a sledge hammer be taken to anything. Neither do I advocate any act that would endanger anyone's life or safety. . . . The most interesting parts of the technological order in this regard are not those found in the structure of physical apparatus anyway. . . . Luddism seen in this context would seldom refer to dismantling any piece of machinery (p. 331).

This, it seems to me, is not only to abandon his basic insight about the political significance of artifacts as artifacts. It also opts for cheap grace, choices without consequences. The logic of Winner's position seems to me to entail something more like the motto of a friend of mine: Break a machine a week. If you can not start big with IBM machines, start small with parking meters.

When, for instance, Winner lists examples of technologies upon which to practice epistemological Luddism--the car, TV, and telephone--he is forced to ignore how in many cases doing without cars and telephones would endanger lives. It is not enough to respond with the equally true fact that cars, even telephones and television, endanger lives in their own way. For the larger truth is that the total population on the planet has--at least up until now--been coordinated with its progressive technologization. To withdraw in even restricted ways from this technologization may, indeed almost certainly will, lead to some loss of life.

To cite a real-life example: One of the more important alternative technology experiments of the last ten years has been the revival of midwifery and home birthing. But this has endangered lives, lives have been lost--in the name of a higher good than life alone. Alternative technology cannot be based

solely on a sentimental attempt to rid the world of the suffering caused by existing technology. Instead, it must argue that materia- existence is not the fundamental good, in the teeth of a modern technology which is predicated very much upon the idea that it is. Winner's failure to address this issue is not unrelated, I suspect, to another remarkable omission in his argument. Despite the fact that his book is addressed to issues of political theory, references to notions of virtue and justice (which are central to traditional political discourse) are conspicuous by their absence.

Winner's failure here to be true to his own deepest insights is foreshadowed at an earlier point. In the context of his explication of Frankenstein, Winner makes a connection between lack of care and forgetfulness, and then observes that

> there is a sense in which all technical activity contains an inherent tendency toward forgetfulness. Is not the point of all invention, technique, apparatus, and organization to have something and have it over with? . . . Technology . . . allows us to ignore our own work (pp. 314-15).

He ignores the radical implications of this suggestion--that technology itself might have to be severely curtailed. What he passes by, however, is more clearly compatible with Ellul--although the explication of this will have to wait for another occasion.

In the foregoing analysis of Winner's work it has been emphasized that he builds on insights found first in literature (which he himself well knows) and then further suggested that he conceives of politics after the model of art (which he does not

explicitly acknowledge). His failure to bring technology under the judgment of the traditional political norms of virtue and justice, together with a positive appeal to carefulness in the construction of technologies, seems to me to point in this direction.

Carefulness can, of course, be a political as well as aesthetic virtue. But its articulation in each case will be subtly different. Artists commonly talk about their work in terms of being careful about implications and how "this form fits with or influences that" in a painting or how "this line contributes to the whole" in a poem, without ever mentioning the norm of beauty. Politicians may likewise note the need to take care about consequences and the fit between parts and whole, but only in light of the principles of virtue and justice. Indeed, one paradox of a work such as Plato's Republic is its implication that, if the state is just, the citizen is counseled to be the most extreme conservative, whereas, if a state is unjust, then a citizen may well become the most extreme revolutionary.

My sense is that Winner, like most of us, is uneasy about discussing norms in public--an uneasiness which is reflected as well in the occasions when he mentions Ellul's Christian judgment of technology.

> His eye here is that of a Christian theologian. . . . Technique in his view is truly sin (p. 218).

And

> There is no doubt that this has religious meaning for him. Man now worships Mammon rather than God (p. 281).

Although it is not true that for Ellul technique is sin,[14] it is the case that Ellul thinks it has to some extent, under modern circumstances, become a manifestation of those "principalities and powers" against which the Christian is called to wage battle.[15] But what strikes me as remarkable in Winner's comments is the studied neutrality with which he walks around the judgment he attributes to Ellul, being careful neither to affirm nor deny, agree nor disagree. Nor does Winner at all explore the way Ellul's theology undergirds his sociology. The reason, I would once more suggest, is that Winner has adopted an alternative--but ultimately less radical--foundation for his own political critique of technology. The artist, unlike the believer, is not willing to face martyrdom.

FOOTNOTES

1. Langdon Winner, Autonomous Technology: Technics-Out-of-Control as a Theme in Political Thoughts (Cambridge, MA: MIT Press, 1977). All page references in parentheses are to this text.

2. Langdon Winner, "The Whale and the Reactor: A Personal Memoir," Journal of American Culture 3 (Fall 1980): 448.

3. "Whale and Reactor," pp. 449-50.

4. Langdon Winner, "Cybernetics and Political Language," Berkeley Journal of Sociology 14 (1969): 1-17. This is a review essay on Karl W. Deutsch, The Nerves of Government (New York: Free Press, 1966).

5. For two contributions to this project, see Langdon Winner "I'm Not Even Here, I Just Stick Around for My Friends," Rolling Stone (April 1970) and "Trout Mask Replica" in Greil Marcus, ed., Stranded: Rock and Roll for a Desert Island (New York: Knopf, 1979), pp. 58-70.

6. Langdon Winner, "Technologies as Forms of Life," in R. S. Cohen and M.W. Wartofsky, eds., Epistemology, Methodology and the Social Sciences (Boston: D. Reidel, 1983), p. 256.

7. "Technologies as Forms of Life," p. 257.

8. See "Technologies as Forms of Life," p. 254: "Thus, the issue is not so much that of technological determinism but, rather, of what might be called technological somnambulism--how we so willingly sleepwalk through the process of reconstituting the conditions of human existence" (my italics).

9. See, e.g., Friedrich Dessauer, Philosophie der Technik (Bonn: F. Cohen, 1927) and Gilbert Simondon, Du Mode d'existence des objets techniques (Paris: Montaigne-Aubier, 1958).

10. This is the only chapter in Autonomous Technology which is not found in Winner's dissertation.

11. Langdon Winner, "Do Artifacts Have Politics?" Daedalus 109 (Winter 1980), p. 123.

12. Ibid., p. 128.

13. Ibid., p. 132.

14. See Jacques Ellul, "Nature, Technique and Artificiality," Research in Philosophy and Technology 3 (1980): 263-83 and "Technique and the Opening Chapters of Genesis" in C. Mitcham and J. Grote, eds., Theology and Technology (Lanham, MD: University Press of America, 1984).

15. See, e.g., Jacques Ellul, The New Demons (New York: Seabury, 1975) and Living Faith (San Francisco: Harper & Row, 1983).

AN EXCHANGE OF LETTERS

From Langdon Winner

Crown College
University of California,
Santa Cruz
Santa Cruz, Calif. 95064
April 20, 1985

Dear Carl:

Thanks for sending me a copy of "Langdon Winner on Jacques Ellul: An Introduction to Alternative Political Critiques of Technology." I welcome this opportunity to respond.

The essay's sketch of the context in which Autonomous Technology was written is an accurate one. The politics of the New Left and the movement for a new culture were indeed important influences upon the project. It is also true, as you point out, that references to artistic and cultural expressions of technics-out-of-control are a significant aspect of the discussion. I'm impressed with how well you've been able to characterize this part of the project. Nevertheless, your conclusion that I see "politics through the eyes of art" left me puzzled. In my mind, neither the basic inspiration nor the substance of the book is aesthetic in character. The central focus of the inquiry was always one in political theory.

Your account of the significance of the first four chapters closely matches my own sense of them. But when you begin considering the heart of the book, chapters five and six, it

seems to me that your interpretation takes an odd turn. On [p.103] you note that I expound and criticize "the relevant views of a spectrum of political theorists" and conclude that my argument strikes you "as less successful than it might have been." Fine; each reader must judge whether or not I have been successful in making my arguments. But at this juncture it appears that you do not take up chapters five and six as they actually appear, but rather point to a brief, incomplete summary that comes in a later essay, "Do Artifacts Have Politics?" While it is legitimate to read my later essays in light of arguments advanced in Autonomous Technology, I believe it is a mistake to read the book in terms of those subsequent pieces. My argument about how artifacts have politics comes at a much later stage and works with a much different set of themes and materials.

My aim in chapter five, "Artifice and Order," is completely explicit. I draw upon a variety of texts and authors seeking to identify a theory of technological politics, one that has sprung up in the cracks of a number of very different persuasions in modern political thought--liberalism, conservatism, socialism, and anarchism. Seldom stated as a coherent whole, this theoretical perspective tries to account for a number of troubling circumstances that the existence of technology creates for any political society. Thus, I read Ellul, Marcuse, Mumford and others for the central themes in this inchoate theory. The opening pages of the chapter, pp. 173-75, spell out this approach very clearly. My intention is to place the crucial concepts, arguments and concerns of this way of thinking out in the open. Once this is done, the reader can ask whether or not such claims

about technological politics significantly illuminate modern political life. Obviously, I believe that the theory sheds light on crucial matters that other points of view usually overlook.

About this theory, I admit, the book remains sympathetic yet circumspect, a quality in those chapters that sometimes upsets people who expect simple affirmations or strong denials. Some of this circumspection comes from the characteristic approach of the academic discipline of political theory to the authors and texts it examines. By comparison, if I were doing an interpretation of John Stuart Mill or some other author, no one would be surprised at my outlining themes in his work, agreeing with some arguments, taking issue with others. What appears to trouble some readers--and I am not talking about you at all here--is that I do the same with this material; as it assembles the theory from a collection of writers, Autonomous Technology stops short of saying: Here's the truth and let's all line up behind it (or, as others would have it, here are some bankrupt, mystifying notions that need to be discarded). For that is simply not what I'm after.

In Chapter six I go on to offer what I hope will be some refinements of the theory of technological politics. I argue, for example, that the developmental logic of sociotechnical systems does not lead to total centralization; power is more likely to rest in specific instrumental/functional organizations and need not move to any overarching center of control. At this juncture, my enterprise becomes something like that of empirical political science. Unlike an empiricist, however, my concern is not only to explain, but also to reveal the moral complexion of

these issues, the painful predicaments that "reverse adaptation," "technological imperatives" and the like create for political society.

On page 385 of the index there is a list of what I take to be key concepts and questions in a theory of technological politics. The perspective has ways of talking about many of the central questions that any serious theory of politics must address: order, citizenship, agency, etc. Your observation that the book does not pay attention to norms of virtue or justice [p.110] is entirely correct. My response is: Yes, and that's not the half of it. The writers in question are convinced that the advance of technology creates a profound disorder and distress in political society. Rather than defend the fundamental principles of a well-ordered society, theorists in this genre seek to argue that conditions which arise in technical civilization are incompatible with <u>any</u> reasonable notion of freedom, good order or justice. Yes, that makes for an incomplete political theory; the positive side of the argument is either missing or assumed. But at an early stage in the analysis that does not matter much. The patient is sick by any conceivable definition of health.

It is true that I have never fully written the dialectical counterpart of the kinds of criticisms I take up in the book. I have not written my equivalent of Ellul's <u>The Ethics of Freedom</u>, his most complete answer to the maladies described in his sociology. The clearest example of my own attempt to get beyond diagnosis to a more positive view is to be found in the version of "Techné and Politeia" rewritten for the <u>Whale and the Reactor</u>.

One way to characterize Autonomous Technology as well as my later writings is to notice that they respond to a question: Why does the tradition of Western political theory suddenly go mute when confronted with the overwhelming success of modern technology? That is a vacuum in our thinking which the writers on technological politics notice and want to remedy. The intellectual motel named Critical Thinking About Technology has a neon sign perpetually flashing "VACANCY." For the time being I have checked in.

I understand your qualms about the concluding chapter and "epistemological luddism." I'd reached a point in my thinking where the only turn was to launch forth on a new path. The direction is suggested on p. 325 when I argue that "Different ideas of social and political life entail different technologies for their realization." That announces an entirely different project, one upon which I've been working ever since. When the chapter postpones this work and suggests an epistemological luddism experiment, I am in effect asking the reader: Can you imagine living without any of the major technological systems that surround you? If even that is beyond imagining, then the idea that one might break new ground in challenging the present dominance of technology is a paltry hope. In fact, I have often done the epistemological luddism experiment in my classes. Students are always appalled to recognize the extent of their dependency. Each day of our lives we engage in activities that support and recreate conditions of sociotechnical domination, all the while imagining ourselves to be free.

You conclude [p.107] that I believe we need "not less but more technology." I have never argued or even tacitly yielded that point. My position has been that IF a society is going to innovate through technological systems building, it faces the most serious political questions about the forms of life and institutions it will generate. And I will not accept the common reply that "We can't know the outcomes." Our ignorance is completely deliberate, purchased at a very high price. We invest in knowing certain aspects of change while consigning other areas of possible knowledge to the vacuous categories of "the unforeseen" or "the unintended."

You also say that I ignore the radical implication of my own argument, namely "that technology itself might have to be severely curtailed." Sometimes a writer wants to leave space for the reader to draw his/her own conclusions. Certainly the implication you mention has not gone unnoticed by the technocratic administrators who have gone out of their way to denounce my writing on exactly that point. The bishops of the church are quick to spot any signs of heresy.

In my present work I do argue that the politics of technology involves art, although art in a much different sense than your essay implies. I see technological systems-building as an activity within the category of "work." What is at stake with the introduction of each new technology are things built to last, artifacts that alter the structure of human action and interaction. From this point of view, freedom and choice are to be found in two key moments: (1) the yes/no decisions about whether to adopt a variety of technology at all and (2) the

design of the finished form of instrumental things. What matters is the making of an artificial world in which humans live. What should such a world contain? What should it exclude? And how can one talk about such questions in a genuine political sense without falling into instrumental categories of evaluation?

There are, of course, a great many other things that might be discussed: my views of the significance of Ellul's theology; whether or not I've added anything to the theory of technological politics or merely clarified it; what, after all is said and done, an effective response to the world of technology would be. But we'll have to talk about these at another time.

/s/ Langdon

From Carl Mitcham

Dept. of Humanities
Polytechnic Institute of New York
Brooklyn, New York 11201
May 17, 1985

Dear Langdon:

You're right, of course, I over-played the interpretation of you as a representative of the criticism of politics from the perspective of art school. I'm somewhat guilty of using you for my own purposes. What happened was that I started out, on the basis of preliminary readings of your work, with a general sense that this was at least partly true. (It still seems to me partly true, as confirmed by your comments about the need for more consciousness in the design of our artificial world.) I had planned to compare your approach with that of Ellul, because Ellul's attitude toward politics is very much influenced by religion. Then I was going to argue that there were strengths and weaknesses to each approach, and suggest that both could throw light on issues of virtue and justice--and possibilities for transformation. But when I got into what was to be the first third of this analysis, the section on Autonomous Technology, I got carried away. A careful reading revealed a work more rich than anticipated. I eventually did realize, at least in my peripheral consciousness, that I was forcing things a bit with my preconceived framework, but there remained just enough truth to it that, alas, I stuck with it. And there was not enough time or space to go on to the other two projected sections of the paper and suitably qualify my comments.

Let me just briefly, though, sketch out what I still think may be the case. You (and Ellul) are right that political life (like most other aspects of life in our time) has been influenced and transformed by the pervasiveness of technique, technologized if you will. Technological politics, to use your term, is a reality. Now this reality is subject to criticisms of both internal and external sorts. The two internal ones are from the point of view of technology (need for more efficiency) and politics (issues of virtue and distributive justice). The two external ones are of art (need for more carefulness and sensitivity in construction) and religion (problems of obscuring the transcendent). Alliances tend to develop most naturally between technological and aesthetic critiques, on the one hand, and political and religious critiques, on the other. It is no accident, for instance, that the alternative technology movement has been of great appeal to arts-and-crafts people, and that Catholic bishops write pastoral letters on social justice. Sure there are cross-overs. In fact, the religious roots of alternative technology ideas has been overlooked (E.F. Schumacher was a dedicated Catholic and his earliest proposals were published in Good Work, the quarterly of the Catholic Art Association), and artists certainly get involved in ban-the-bomb demonstrations. But there still seems to me some truth in this framework, although I admit it needs a lot more development. My apologies, however, for the ways I made you simply a means to this end.

/s/ Carl

CONTEMPORARY CRITIQUES OF TECHNOLOGY: RESPONSE AND COMMENTS

Steven L. Goldman

The three papers that make up this program are plainly diverse. Don Miller offers the first part of what promises to be a major intellectual biography of Lewis Mumford; Carl Mitcham begins a careful distinction of two thinkers, Langdon Winner and Jacques Ellul, who seem to have a great deal in common; and Paul Durbin, alone, addresses technology itself, as opposed to accounts of technology, and one specific aspect of technology at that. This diversity notwithstanding, I was struck, as I read in Mumford in anticipation of this Colloquium, by recurrent echoes of Giambattista Vico that I kept hearing and that now seem to me to suggest an underlying commonality of conception of technology in which all of these papers share. Let me first discuss, necessarily briefly, the nature of this shared "deep structure" and then proceed to comment on and respond to specifics in the individual papers.

In an article entitled "Giambattista Vico and Jacques Ellul: The Intelligible Universal and the Technical Phenomenon" (Man and World 15 [1982]: 407-16), David Lovekin contrasted the notions of imaginative universal and intelligible universal in Vico's philosophy of cultural development. Lovekin argued that "the technical phenomenon [in Ellul] is an advanced and, perhaps, degenerate form of Vico's intelligible universal which has cut loose from a traditional cultural framework and which, in fact,

co-opts all other humanistic perspectives such as religion, art, and philosophy." What Ellul calls the technical phenomenon is, in Vico's scheme, symptomatic of the transition, in the course of a nation's evolution (the term is, of course, anachronistic here) from domination of its cultural life by the imaginative universal to domination by the intelligible universal.

This transition, as the expressions themselves suggest, involves a shift from accounts of the world whose terms derive from the imagination to accounts whose terms derive from the intellect. Just such a shift would seem to have been an important feature of the decisive collapse, in the early seventeenth century, of Renaissance magical nature philosophy (pace Newton's alchemical experiments) and the coordinate rise of modern science. Where the former rested on a subject-centered epistemology whose symbols were drawn from the imagination, conceived as the faculty in which reality appeared to the mind, modern science rested on an object-centered epistemology in which reality appeared through the senses and was apprehended by the intellect on condition of a rigorous suppression of the imagination. Some years ago I expressed this contrast by associating the former view with a conception of the universe as a realm of subjects held together, made uni-tary, by an intrinsic force of sympathy called love, and the latter view with a universe of objects held together by an extrinsic force, namely, gravity. Where Giordano Bruno, for example, epitomized the Renaissance view and Vico's conception of a thinker rooted in the imaginative universal, Francis Bacon epitomized the essential ontological and epistemological (but not methodological)

commitments of modern science--its object-based, hence objective, conceptualization of what was "out there"--and the onset of the imperialism of Vico's intelligible universal.

Vico characterized the imaginative universal as a synthetic and holistic mode of understanding, one whose symbols were concrete and directly linked to sensuous particulars. It was a mode of understanding linked to what he called imaginative metaphysics in which humans attempted to understand phenomena by transforming the self into elements of the phenomena. The imaginative universal, then, led us out of our selves and made us commune with the external world. The intelligible universal, by contrast, is allied to a rational metaphysics that is analytic, discursive-linguistic, specialized (anti-holistic) and invents abstract surrogates for the sensuous particulars of experience. These surrogates, constructed by abstracting from particulars their perceived common qualities, have the effect of taking phenomena into the mind in order for us to understand them. The intelligible universal, by generating intellectual substitutes for sensuous experience, turns us back into our selves and undermines the integrity of the sense world.

The transition from imaginative to intelligible universal marks the end of the ideal phase of a nation's history and the beginning of a self centered phase. With the maturation of the imaginative universal, human being had overcome the primitive barbarism of sensation, of thinking with and through the body, of communicating by means of gestures. Through cultivation of the imagination, humans discovered the power of creating symbols and

of relating to the world and to one another through those symbols.

With the shift to the intelligible universal, the way was opened to "philosophical and scientific reflection, [to] inductive and deductive arguments, and [to] general refinements [of thought] and a quickening of wits" (Lovekin). But the way was opened as well to a new "barbarism," a barbarism expressive not of the primitive, but of the refined, a barbarism of excessive intellectual reflection, a kind of decadence bred of profound self-absorption. Vico saw a great danger in Cartesian rationality precisely because it was able to exist independent of the sense world. That independence was bought at the expense of a communion with the world that was vital to maintaining a constructive relationship between ends and means, for example when acting on the world. Losing this contact leads a dominion of means associated with over-refinement of thought and this to the "second coming" of barbarism which, for Vico, is Providence's way of undermining the excesses of the intellect (albeit at great cost in suffering to society) in order to root even the intelligible universal in fantasia, thereby regaining contact with the sensuous particularity of the world and, through contact with the world thus re-established, once again linking human development to the historical development of the world.

This lengthy discussion is justified, I believe, on two grounds. First, because Mumford's conception of technology and history seems so strongly Vichian. Like Vico, Mumford identifies Man's central power, vis-à-vis the external world, not with tool making but with symbol making. In The Myth of the Machine (volume

two), Mumford wrote that Man's "greatest technological triumph" was the invention of symbols and complex symbolic structures that enhance consciousness. While technology is a "formative part" of human culture as a whole, Mumford insisted that technics, tool making and tool using, "has been deeply modified at every stage of its development by dreams, wishes, impulses, religious motives that spring directly not from the practical needs of daily life, but from the recesses of Man's unconscious." The key to understanding human existence is grasping the "dynamic internal world" of which human gestures, symbols, and constructive activities are symptomatic.

As in Vico, Mumford makes human evolution a function of a dialectic between self and object in which the world is "etherialized" through the projection onto it of our symbol creations and our inner life is "materialized" through our action on the world. Only when technology is dominated by our subjective lives, that is, only when action on the world flows from creative symbolic energies, is technology "good" technology.

Under the influence as well of Geddes' ecological holism, Mumford was committed to the view that a society was "healthy," so to speak, when there was an appropriate balance between its symbology and its technology, when the application of the physical power available to that society was under the control of values deriving from that society's central symbolic structures. Mumford saw the Middle Ages, incorrectly in my opinion, as such a time and the last such time to date. Subsequently, technology has insulated itself from our culture's central communal symbolic

structures. The coherent organization of life in religion, art, and social custom has withered under the imperialism of values deriving from technics and its self-centered application; and society has suffered accordingly. As technics have become more powerful, our society has seen its communal values undermined, its social and political institutions reshaped in accordance with the needs of "pure" technology. Somehow, somewhere between the Middle Ages and the modern era, the feedback loop that needed to exist between symbols and technics in order for means to be matched to ends and to be driven by them, was severed, diverting Western societies onto a track leading to megatechnics, to technology pursued for its own sake, and to the dominance in society of the Power Complex, of values deriving from self-absorption on behalf of nurturing technology.

The connection between Mumford's thought here and Vico's is obvious. But it seems to me also the case, and this is my second justification for spending so much time on Vico, that Vico's notion of the "imperialistic" character of the intelligible universal and the emergence in a culture under its domination of a barbarism bred of excessive intellectualism, accounts for the problematicity of technology for Ellul, Marcuse, and Winner, among many others, no less than for Mumford, and even for Paul Durbin!

What Ellul, for example, perceives as wrong with modern technology, as a result of which it is a wellspring of problems for society, is the dominance in it of technique, of a form of consciousness committed to serving the needs first and foremost of technology. Furthermore, it does this by way of an undeniably

rational account of technology's own needs that compels our assent to the adaptation of extra-technological social and personal values to the satisfaction of technology's needs. This is a symptom, surely, of an advanced stage of domination by Vico's intelligible universal, of intellect cut off from an integration of Man and world, and with a vengeance. And this would appear to match the account of the problematicity of instrumental rationality in Marcuse's critique of modern technology and of the reverse adaptation of ends to means in Winner's conception of technological politics (as opposed to a politicized technology in which the polis imposes its values on technology).

Durbin's paper is narrowly focused on legitimating piecemeal liberal-political public interest activism as a means, even an optimal means, of controlling technology in a democratic society. Durbin eschews addressing the underlying causes of technology-related social problems in favor of ameliorating the effects. He writes, for example, "I would be satisfied to have the major technology-related social and cultural problems solved, even if the remaining roots could be expected to generate new problems for future reformers to deal with." Ultimately, he says, if all the symptoms were cured, the root pathology would have been eradicated as well. This pragmatic concern with the overt and the particular nevertheless seems to me to rest on a general theory of the covert structure of technological action.

From the same sources used by Durbin to argue the essential multiplicity of contemporary technology-related social problems,

one could, I think, equally cogently argue their essential unity and coherence. All of the problems appear to derive, in Galbraith, Bell, and Noble, the very authors cited by Durbin, from the relationship between the determinants of technological action and the power structures of the state. I would argue that what determines technological action is a parochial interpretation of how such action can benefit vested interests served by the actors, whether as entrepeneurs, corporate managers, bureaucrats, or politicians. The scattered brush-fire appearance of technology-related social problems, on this view, is merely an appearance. The problems are not scattered because of an essential incoherence between them; they are all correlated through their common ground in a decision process whose parochialism guarantees the generation of problems for society insofar as those problems are not perceived, at the time of the decision making, as also being problems for the vested interest on whose behalf the technological action is being undertaken.

If this is the case, either public interest activism confronts an interminable series of challenges that may, through their mutual interaction, become increasingly complex and intractable (for having to confront corporate and political power at progressively more threatening levels), or there needs to be an essential commonality to such activism. That is, each instance of it needs to aim at their common underlying cause instead of aiming at what is unique to their respective surface problems (acid rain, worker alienation, nuclear waste disposal, income distribution inequities, et cetera). And what is the same in each case is bringing to bear on the parochial concerns of the

technological actors, the catholic concerns of society as a whole, making society's values an explicit feature of the selective appropriation of values now typically characteristic of corporate and political decision making in the area of technological innovation.

For me, coping effectively with technology-related social problems entails going to the root of that about modern technology that generates problems for society, because there is a single such root. This may, and I believe does, suggest that an effective strategy for accomplishing this is by way of a broad range of specific issue-oriented activist reform efforts. Each of these will use the particular problems on which it focuses as a means, generally a highly visible and easily comprehended means, of bringing to the surface the generally invisible and difficult to comprehend "real" problem: namely, the narrowness of the value elements that were factored into the decisions bearing on the actions taken. Eventually, the convergence of the objectives of these separate public interest groups will become manifest and in the process what will be highlighted is the generic cause of all of these problems.

Even in my ideal case, however, let alone Durbin's, one cannot eliminate technology-generated social problems completely. The most one could hope for is the elimination of problems caused by technological decision making resting on a crudely ideological foundation. Problems deriving from insufficient technical understanding, society-wide prejudices and subtle ideological commitments seem to me ineradicable, and they will have to be

fought Durbin-style. Furthermore, I agree with Durbin that American society is pervaded by social and political values that encourage public interest activism and reinforce its effectiveness. Where we differ, and the difference is central, I think, is in whether or not this activism is truly piecemeal, for lack of a common objective, or only superficially piecemeal, as above.

Don Miller's account of Mumford as a philosopher of technology seems to me to fit very well into a correlation of Mumford and Vico. Miller describes Mumford as having assimilated technology into his theory of culture. Indeed, from Technics and Civilization through The Pentagon of Power, Mumford systematically related artifacts to symbolic constructs of the mind in a reciprocal-dynamic way that made cultural history the story of humanity inventing itself through its chosen forms of conceiving the world. From these conceptions, embodied in value-laden symbol systems, flowed actions aimed at that world, but the results of those actions reflected the world as it was, as well as the world as it was conceived. And so through processes of flux and reflux, projection of subjectivity and objective response, symbolic interpretation of the world and institutionalization/materialization of symbols, humans evolve, societies evolve, and the world evolves.

Miller emphasizes Mumford's recurrence to the notion of balance in a culture. Vico and Geddes help us to appreciate how deep this criterion runs. Balance, for Mumford, relates to the commensuration in a society between symbolic activity and the technical-objective articulation of those symbols. Imbalance

means that ends and means are incommensurate. The result is either a kind of anti-technological Hippie-dom, which Mumford excoriated, or the equally corrupt Power Complex, in which technical activity feeds itself. Geddes' sociobiological notions would seem to reinforce this idea, which has a clear echo in Vico (as well as Ellul and Winner, among others).

Gedde's notion of "insurgence," of the reaction of an organism on its environment, requires that an organism's self-generated activity reflect a balanced response to the environment's activities relevant to that organism. If the organism is insufficiently active, the environment will rush in on it and crush it. If the organism is overactive, or inappropriately active, then it will overwhelm or upset its environment with ultimately destructive consequences for both. Aristotle says something very much like this, with regard to every thing having to maintain itself by the active assertion of its essence against the fracturing effects of its environment, ever threatening to break in upon it. And the consequences of imbalance, of an incommensurability between the self-action of the organism and the nature of its environment, echo the loss of both subjective life and objective well-being for Vico, as well as for Mumford, when subjective energies, channelled through symbolic constructs, cease to guide technical action on the world.

Given the central role Mumford attributed to the creation of symbols, it is not surprising that he identified artists as the true reformers of a society's life, because artists are the

symbol creators in a society. Without being prepared to document a case here, (though I have argued it at length elsewhere) I must say that I find this implausible. I do not myself see artists as symbol creators in the sense Mumford intends, any more than I think scientists invent the symbolic structures latent in the concepts they "create" and out of which they build their models and theories.

I cannot say where these symbolic structures and their embedded value commitments come from, but when they become manifest, for example, in the shift from philosophical realism to naturalism in the High Middle Ages and the cognate shifts from descending to ascending theories of political power and from Romanesque to Renaissance aesthetic canons, it seems to me that we are seeing symptoms of deep transformations by and within a culture welling up from below, not the trickling down of individual inventions from above. I would prefer to interpret artists, architects, writers, and composers as well as scientists and philosophers as expressing symbolic interpretations of existing values rather than introducing values to society by inventing them. But although I think this is not altogether peripheral to Mumford's philosophy of technology, because that is embedded in a philosophy of culture, I think that it is peripheral to the phase of Mumford's intellectual life that Miller lays out for us here.

For Winner, as for Mumford and for Vico, technology is problematic today, not because our artifacts have turned malevolent, but because of a failing in us, as a result of which we continually discover destructive consequences of ostensibly

constructive technical activities. Early on in Autonomous Technology, Winner writes that our inability to deal with technology today is not a matter of ignorance of facts, but a consequence of having lost "our bearings." As a result, the "contemporary experience of things technological has repeatedly confounded our vision, our expectations and our capacity to make intelligent judgements."

Mitcham calls our attention to what can perhaps be called "the message" of Winner's analysis of technology: the call to recovering control on behalf of human subjects, not technical objects. "A crucial turning point [for a society increasingly troubled by technology] comes when one is able to acknowledge that modern technics, much more than politics conventionally understood, now legislates the condition of human existence." Following Ellul, Winner locates this point after technology has acquired a degree of complexity such that it is capable of generating its own successor situations, that is to say, has become autonomous.

This autonomy takes two forms: the internal necessity of evolutionary technical sequences and the inevitability of social effects following the implementation of specific technologies. This latter reveals the pathology of autonomous technology called reverse adaptation, whereby personal and social values are forced to adapt to the requirements of technical means, instead of means being adapted to personal and social ends. At this point, the citizenry of such a society realizes that it is no longer a question of who governs their society--who, therefore, can be

made accountable for what is going wrong--, but what governs. And the answer to that question is technology become political; the correct response to which, apparently, for Winner, is to dismantle the technological order as currently constituted and reconstitute it as intentionally political.

I would observe two things about this suggested course of action, one only partly frivolous. First, the recent experience of American society with the "dismantling" of A.T.& T. should perhaps give us pause: it is not going to be at all simple to appreciate in advance just how complex embedded technologies are, nor is it going to be simple to anticipate which dismantlings are going to increase the people's control and which are not. Second, Winner's discourse concerning dismantling the technological order and restructuring it along aesthetically sound lines seems to me far too cool. I recall a comment of Turgot's that `the flowered stems of the fine arts grow when watered with blood.' This is symptomatic of Turgot's conviction that progress in science and the mechanical and political as well as the fine arts could come only when an existing order was undone and subjected to irrational passions, "tumultuous and dangerous," but potential wellsprings of progress where reason and justice can only maintain a status quo.

We should not deceive ourselves. If technology becomes so problematic to us that we are driven to plan its dismantling, we should be aware that this will be a "bloody" task, at least metaphorically and quite possibly literally. This does not mean that it may not be the path to follow, though the overthrow of the Shah and the technocratic society he planned for Iran,

suggests that mere bloodletting is not nearly enough to dismantle a technological order beneficently. Furthermore, this caution reflects one of Winner's own convictions, to wit, that the technical always does more than we intend. Coordinately, undoing the technical should always turn out to require undoing more than we had planned on undoing and without our being able to anticipate what will have to be undone. This is just a corollary of taking very seriously the notion that modern technology is a complex system in the same sense that modern society is according to Durkheim (as quoted in Autonomous Technology): namely, "a specific reality which has its own characteristics" (my emphasis).

I referred earlier to Mitcham's formulation of the autonomy of technology according to Winner: a two dimensional phenomenon --one dimension being the internal necessity of technical evolution, the second the inevitability of social effects--whose manifestation is its power to define a social order of its own and to impose it on the existing social order. In spite of the care Winner takes, especially in the second chapter of Autonomous Technology, "Engines of Change," to articulate a rich and complex social process conception of technology, I think that he still isolates the technical from the social. The result is, at the very least an impression, that the technical can be autonomous, because the technical is treated as an extra-social phenomenon that has appropriated certain social resources as part of its input and whose output has more or less significant social implications. When the internal structure of the technical so

conceived becomes sufficiently complex, its impact on its social context changes and its output commands a transformation of that context the better to serve its input needs.

I do not agree with this picture of technology and its autonomy. For me, the social character of technology pervades the domain of the technical. David Noble's new book, The Forces of Production, to cite just one illustration, amply demonstrates the contingency of technical evolution, in this case the evolution of programmable machine tools, and that this contingency reflects quite deliberate choices made by human actors on the basis of their parochial interpretation of how that innovation can serve their particular interests. The constitution of technical knowledge bases in science, engineering and even craft skills at any given time already reflects ideological judgements to pursue just that content, to reinforce certain kinds of knowledge and skills and to let others wither. (This is not at all to deny that there can be, and are, surprises that lead to unanticipated developments.) Furthermore, the exploitation of this technical knowledge is also contingent upon decisions reflecting a selective appropriation of this knowledge together with existing resources of capital, labor, raw materials, and social and political power. The operative term is "selective" as in "ideological."

The autonomy of technology for me, then, is a reference to a property of a particular social process within the wider fabric of society, a process that has successfully assimilated a certain kind of power in its society: the power to serve interests of its own, based on the exploitation of technical knowledge, by

relating those interests to broader social processes. Technological action is driven by contingent, self-serving decisions to cultivate technical knowledge in delimited ways on behalf of specific ends supposed to serve narrower interests than the abstract good of society as a whole. To the effect that serving those interests using technical innovations requires appropriating resources, capital, labor, and political power, these decisions will reflect an interpretation, as well, of how to exploit the prevalent social setting, but this will again be a parochial interpretation. This is not intended as a conspiratorial theory of technology. I see it rather as an essentially political theory of technology, one which makes all aspects of technological action political. That technological action appears autonomous, derives in a limited sense from an intrinsic feature of the technical within technology, namely, its unpredictability. More generally, however, this autonomy is expressive of the social and political power that has been successfully corralled by technology. This is an extremely revealing fact not about the technical, but about the ultimate source of all political power, the polis: revealing those actions in which they can be made to acquiesce, or which they will actively support. The whole area of what Winner means by people exercising choice remains unclear to me and not alone with regard to technological decision making. If, as he seems to say in Autonomous Technology, people's linguistic behaviors are expressions of choice, then such choosing fits very well into the

kind of autonomy and social determination that Winner attributes to the technical.

A final word on the convergence of science and technology in the twentieth century, a notion Mitcham reminds us that Winner supports, claiming that autonomous change in science and technology are cognate phenomena. I recognize that it has become very popular of late to assimilate science to engineering, or engineering to science on the ground that the two are virtually indistinguishable, at least in practice. This reverses an earlier trend toward distinguishing the two as a means of correcting the Victorian vice of seeing in engineering the fruit of theoretical science. It is manifest that one feature of contemporary technology is its intimate coordination with physical science and latterly with life science. This continues the phenomenon associated with the industrial research laboratory, namely the systematic interaction of scientists and engineers. Everyone recognizes the scientization of the engineering profession and of engineering education during this period. The reverse of that coin is the technologization of science, which now manifests itself as the practical dominance within the scientific community of applications oriented activities. This mutual transformation recalls an observation of Mumford's that is eminently Vichian: the Christianization of Rome was paralleled by the Romanization of Christianity. Without denying this at all, it seems to me to continue to be important to recognize that science and engineering remain, in principle, quite distinct enterprises, however much they may interact and overlap in practice. I think that this distinction has

fundamental consequences for understanding the mutual influence of science and society, of science and technology, and of technology and society and that a correct understanding of the relationships among these three factors is precluded by collapsing two of them into one. Engineering poses epistemological, sociological, and political problems of a quite different nature from those posed by science, even under currently popular social-historical interpretations of theory construction in the sciences. I cannot argue this point here, but hope to do so in a future publication.